The OIL WEEKLY
OIL and GAS ENGINEERING
INTERNATIONAL AUTHORITY FOR THE PRODUCING AND PIPE LINE INDUSTRY

MAY 14 1940

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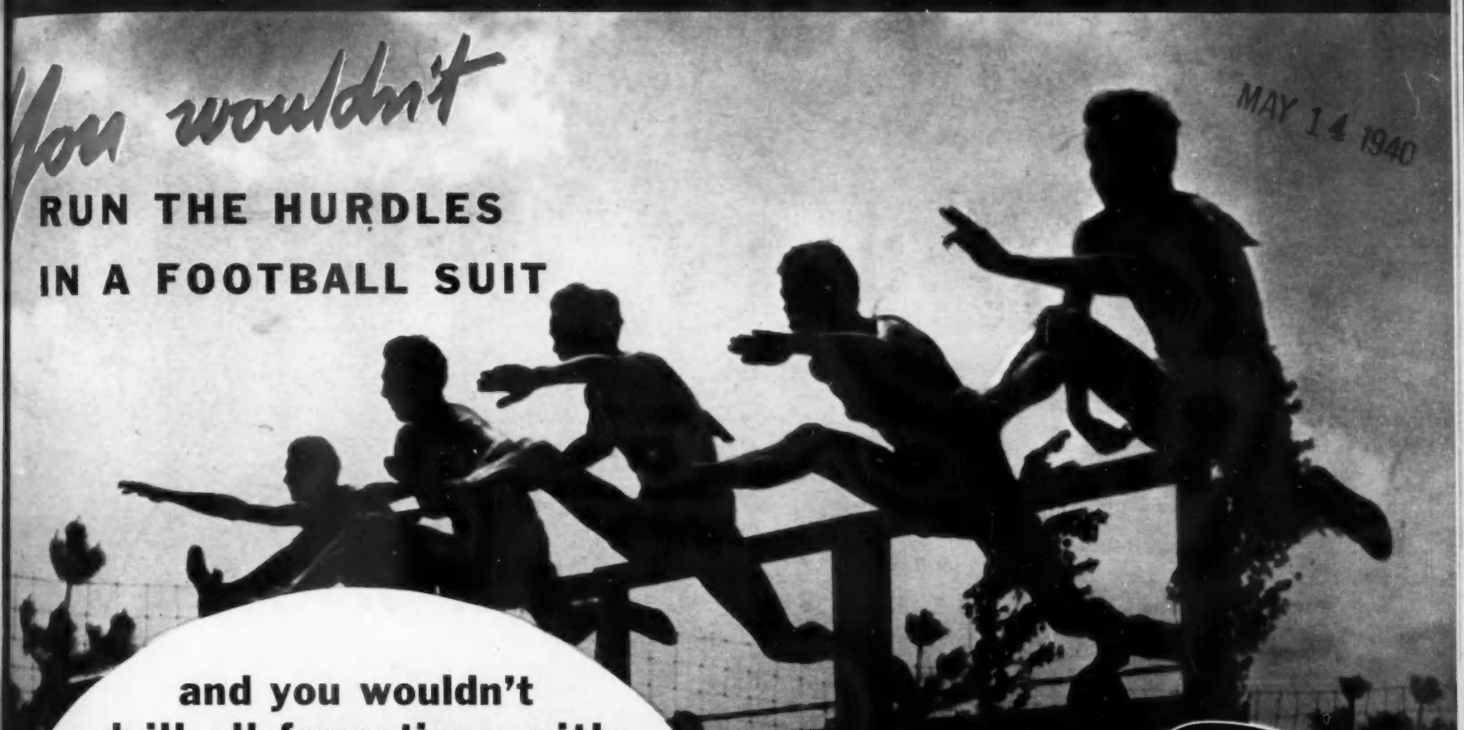
RUN THE HURDLES
IN A FOOTBALL SUIT



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NO TOOLS OR SPECIAL WRENCHES ARE REQUIRED

The Baker Bakwik Model "B" Drill Pipe Float is made with a straight bore body and contains a simple Valve Assembly constructed entirely without threads, which is *dropped into place by hand* and held securely by the tool joint pin above it. When an unrestricted fluid passage is desired, the Valve assembly can be quickly and easily removed from the Float Body.

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The efficiency of the Baker Bakwik Drill Pipe Float has been proved in thousands of wells in oil fields throughout the world and is considered standard equipment where a positive back-pressure valve in the drilling string is desired.

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1. It prevents plugging the bit.
2. It eliminates the annoyance of pulling wet strings.
3. It relieves weight on the derrick and rig equipment as well as on the lines and draw works.
4. It lengthens the life of wire lines and brake bands.
5. It minimizes — often prevents entirely — serious damage in the event the drilling string should part.
6. It prevents blow-outs through the drill pipe.

ALSO OF IMPORTANCE . . .

is the fact that the Baker Bakwik Drill Pipe Float can easily be placed at any position in the drilling string; that the unit is designed for long life; that the Valve Assembly can be quickly and easily serviced on the rig floor; and that replacement parts can be secured at practically any Supply Store or Baker Warehouse.

VALVE ASSEMBLY QUICKLY AND EASILY SERVICED

Replacement of the Valve Seal is ordinarily the only servicing required during the normal operation of the Baker Bakwik Drill Pipe Float Valve Assembly . . . and this operation can be quickly accomplished in the four easy steps illustrated. When it is necessary to replace the Side Seals, new ones can be installed with equal ease.

Step 1

Step 2

Step 3

Step 4

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Looking Ahead

WITH THE EDITOR

AMAZING EQUIPMENT PROGRESS will be revealed at the Eleventh International Petroleum Exposition in Tulsa when the gates are opened on May 18. Many new methods, equipment, processes and development of the past two years will be on exhibit at the 1940 show. The trend is toward "tailor-made" products for specific areas and conditions will be outstanding. Displays will demonstrate many intricate details of advancements in each operating division of the industry, which have resulted in more economical operations and high efficiencies. The next issue of THE OIL WEEKLY will be devoted to this great exposition. Editorial content will include a list of producing and pipe line equipment on display, and a description of all the newer products, plus the names of representatives in attendance for the various firms.

To those attending the exposition these data will be of valuable assistance in many ways. To subscribers unable to personally inspect the more than $12,000,000 worth of equipment on display will be aided in keeping abreast of the rapid advancements in equipment design and application.

»

THE AMERICAN PETROLEUM INSTITUTE Mid-Year meeting comes immediately after the International Petroleum Exposition, and affords oil men another opportunity to learn what is going on within the industry. A highly varied program ranging from governmental and economic problems through the course of production, drilling, pipe line and refining operating advancements will be offered. This meeting together with the exposition affords an unusual chance to see and hear what has and is taking place in the way of both equipment and field technique.

»

TAXES LEVIED on the petroleum industry and its products during 1939 were $100,000,000 higher than the total value of all the crude oil produced in the United States during the year, were nearly four times earnings and about five times the dividends paid to the industry's 1,250,000 stockholders.

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THE OIL WEEKLY

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The Oil Man's Calendar

MAY	
15–17	Natural Gasoline Association of America, Tulsa.
18–25	International Petroleum Exposition & Congress, Tulsa.
20–22	American Gas Association, Technical Section—Production Conference, New York.
27–31	American Petroleum Institute, Mid-Year Meeting, Ft. Worth, Texas.
30–31	National Oil Scouts and Land Man's
June 1	Association, Hot Springs, Ark.
JUNE	
1	Illinois-Indiana Petroleum Association, Robinson, Ill.
3– 6	National Association of Purchasing Agents, Oil Company Buyers' Group, Cincinnati.
20–21	Pennsylvania Grade Crude Oil Association, Bradford, Pa.
29	American Petroleum Institute, Illinois Basin Chapter, Evansville, Ind.
SEPT.	
9–13	American Chemical Society, Detroit.
18–20	National Petroleum Association, Atlantic City, N. J.
OCT.	
7–10	American Gas Association, Atlantic City, N. J.
7–11	National Safety Congress and Exposition, Chicago.
16–18	Independent Petroleum Association of America, Dallas.
31	Texas Mid-Continent Oil & Gas
Nov. 2	Association, Ft. Worth.
NOV.	
11–15	American Petroleum Institute, Chicago.

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WARNER & SWASEY
Turret Lathes
Cleveland

THE OIL WEEKLY

MAY 13, 1940

VOLUME 97 NUMBER 10

The Week's Panorama

THE decline of business, which was under way in the first quarter of this year, apparently has been arrested, as trends have been along a flat course in the past month.

Some promise of an upturn is offered, meanwhile, by increased ordering in various lines.

. . . More moderate operations at wells and refineries were reflected in the latest statistics of the oil industry, covering the week ended May 4. Crude oil production was brought down materially, to within about 85,000 barrels of indicated market demand, as stricter allowables became effective. Crude runs to stills were cut 50,000 barrels daily, and at the new rate of 3,505,000 barrels a day, were only 4 percent above the average in April and May last year.

. . . Despite the reduction of crude runs to stills in the week of May 4, production of gasoline was 94,000 barrels greater than in the preceding 7 days, and stocks of that product were reduced by less than a normal amount for the season. The withdrawal of 389,000 barrels did not bring the inventory much below the recently established all-time peak. At 102,063,000 barrels as of May 4, the supply was 15,000,000 barrels, or 17 percent, greater than that held at the corresponding time last year.

. . . The industry added 661,000, barrels of light fuel oils to storage in the week ended May 4, as the seasonal build-up proceeded. But stocks of those oils after rising to 25,658,000 barrels were about 4 percent smaller than at the corresponding time last year, whereas demand has continued to grow.

. . . Stocks of residual fuel oils, similarly, remain relatively low, being now 6 percent smaller than a year ago, although demand for these heavy oils, used as fuel by industry, is greater. As against 103,043,000 barrels on hand May 4, the industry held 109,523,000 barrels a year earlier.

. . . For the second month in succession, passenger traffic on domestic air lines established a new all-time record in April. Major lines flew about 9 percent more revenue passenger miles in April than in March and 66 percent more than in April of last year.

. . . The recent 5-cent advance of the crude price posting in the shallow fields of southwestern Michigan, from $1.03 to $1.08 a barrel, affected about 27,000 barrels per day of the state's 60,000-barrel total. The increase reflected the decline of production in the area for the past two months, in absence of the discovery of new fields. Since October, 1939, prices in the Michigan basin have been unchanged, within a range of 82 cents to $1.02 a barrel.

. . . Exporters of United States oils doubt if their business will be stimulated in consequence of Britain's withdrawal of ships from the Mediterranean—affecting oil shipments from the Near East.

It is felt that the Allies will continue to conserve dollars for buying airplanes, motors, tractors, and other supplies needed more urgently than oil. The opinion prevails, moreover, that the rerouting of ships away from the Mediterranean may be only a temporary move, designed to exert pressure on Italy.

. . . Even if the Allies should permanently avoid shipping oil from the Near East through the Mediterranean, they would not be very likely to come to the United States for supplies, other than lubricants, which they have been buying briskly.

It is true that they probably would not choose to send available tankers from the Far East and Near East around Africa, a distance of over 10,000 miles.

But instead of sending the ships to the Gulf Coast of the United States, they likely would dispatch them to the Dutch West Indies and Venezuela, sources of supply several hundred miles nearer—about 4000 miles from London.

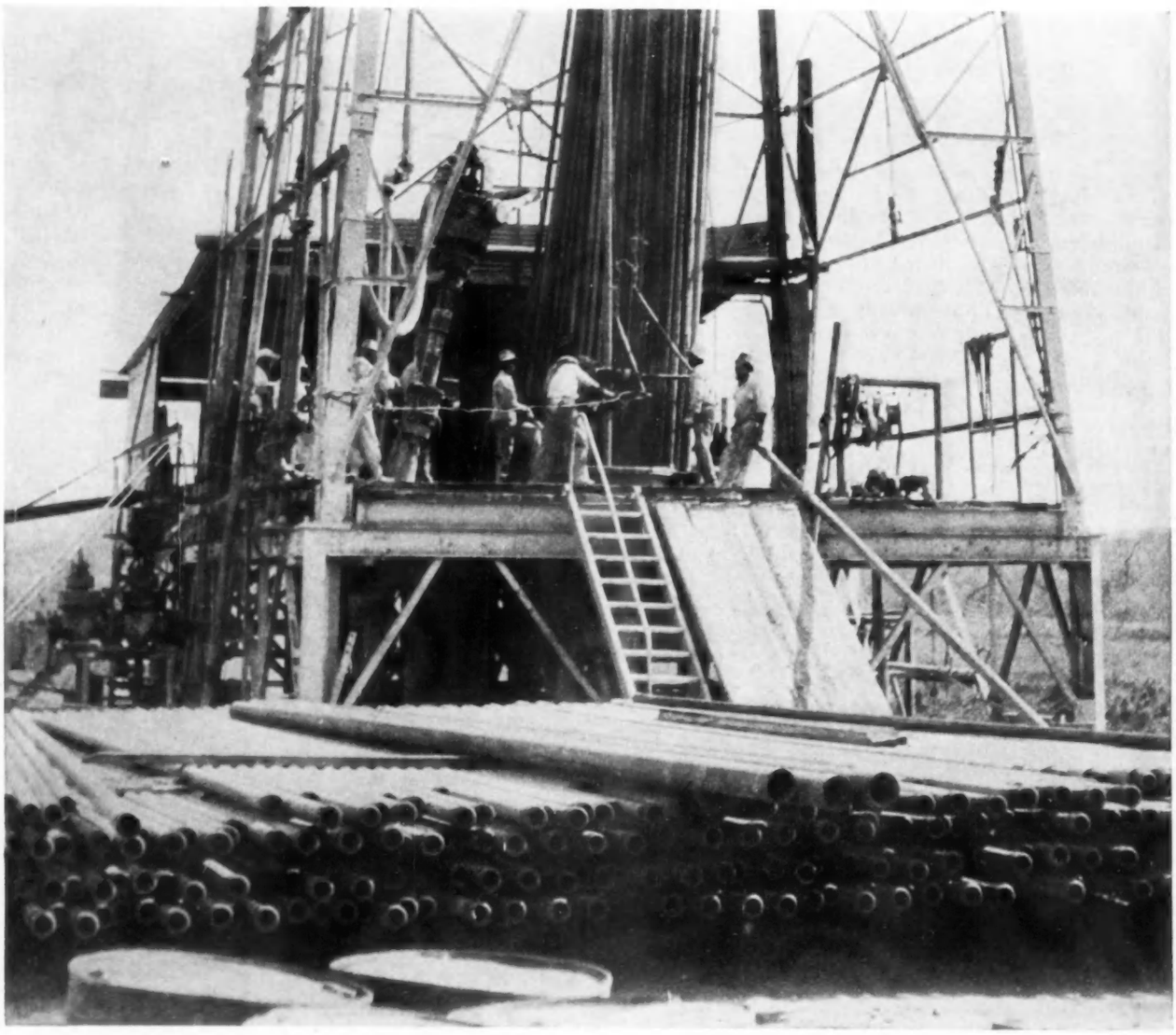
. . . Although the Gulf Coast is thought of as the logical starting point for shipments of oil from the United States to Great Britain and France, some oil has been moving from the Illinois fields to Canada, for reshipment via Halifax to Europe. Such shipments go over a shorter route than from South America.

. . . Figures on oil exports for March showed continuation of subnormal shipments of crude oil and of products other than lubricants. Crudee exports of 4,045,832 barrels were nearly a million barrels less than those in March last year. Gasoline shipments of 2,039,489 barrels in March, 1940, were only one half as great as those in March, 1939; and fuel oil shipments were down about 40 percent, to 2,797,000 barrels. Exports of lubricants were up to 1,169,837 barrels from 818,517.

The United Kingdom took only half as much gasoline in March, 1940, as in March, 1939, and France one tenth as much, while shipments to Canada and Japan also were down.

Drilling Curve Climbs Point Since

By L. J. LOGAN, Associate Editor



DRILLING activity in the United States has been greater this year than ever before in the history of the industry, excluding one extraordinary year; the first four months of 1940 having furnished more completions than the corresponding months of any previous year except 1920.

Up to now, the most active years on record have been 1920, when crude prices averaged over $3 a barrel, and 1937, when the industry prospered more than usually.

In the first four months of this year, well completions in the United States totaled 9713. That was 18 percent less than the 11,812 wells finished in the similar period of 1920, 4 percent more than the 9317 completed in the first four months

Sharply to Highest 1920 Peak

of 1937, and 25 percent more than the 7742 new wells completed between January 1 and April 30 in 1939.

Active field development has been promoted this year by the record-breaking production of crude oil, which has occurred in response to unprecedented demand for petroleum products, as well as by the relatively stable markets for crude.

The industry has been handicapped by an unsatisfactory gasoline market, in consequence of excessive stocks of that product, but the markets for other refined products have been relatively firm, and the established prices of crude oil have not appeared to be in any immediate danger of weakening. Consequently, producers have gone ahead confidently with the drilling of new wells.

In April of this year, field work showed the usual seasonal expansion and was at the highest level for that month since 1937. Wells completed in the United States at the average rate of 77.4 daily, as compared with 74.5 a day in March and 67.6 daily in February. The April drilling this year was 24 percent greater than that last year.

The average daily well completions in April in recent years have been as follows:

April of:	Wells Completed Daily
1933	24.8
1934	47.2
1935	62.6
1936	75.4
1937	89.8
1938	70.1
1939	62.3
1940	77.4

In those same years, the total number of wells completed within the four months from January 1 to April 30 have been as herewith indicated.

First 4 Months of:	Total Wells Completed
1933	3364
1934	5541
1935	6728
1936	7652
1937	9317
1938	8610
1939	7742
1940	9713

The 25 percent increase in drilling this year over last year has been nation-wide in scope, only a few having failed to furnish more new wells in the first four months of 1940 than in the corresponding months of 1939.

Extraordinary increases in field work have occurred in Mississippi, Indiana, Pennsylvania, and other outstanding gains have included those in Louisiana, Kansas, North Texas, the Texas Panhandle, West Central Texas, New Mexico, and Wyoming.

Mississippi, which became an oil producing state last year, has had the greatest gain in drilling in the country, on a percentage basis. Whereas only one well had been completed in the state up to April 30 last year, 50 completions had been reported within the corresponding period this year. That total included 29 oil wells and a dry hole in the Tinsley field of Yazoo County, the discovery well of the state's second oil producing area, the Pickens field, also in Yazoo County, 6 other wildcats in that same county, and additional wildcat tests scattered over the state. The Tinsley field now has 45 oil wells. Mississippi's crude oil

Rigs in Use 19.2 Percent More Numerous Than Year Ago

STATE OR DISTRICT	TOTAL RIGS IN OPERATION Drilling, Rigs Up, Shut-Down				DETAILS OF MAY 1, 1940 FIELD ACTIVITY					
					Rigs in Operation			Prelim. Activity		
	May 1, 1939	April 1, 1940	May 1, 1940	Percent Change from Year Ago	Drilling	Rigs Up	Shut-down	Derricks	Locations	Total Operations
Alabama	4	2	2	— 50.0	1	.....	1	.....	1	3
Arizona	6	7	7	+ 16.6	4	.....	3	.....	2	9
Arkansas	37	44	27	— 27.0	18	2	7	1	.....	28
California	310	297	342	+ 10.3	238	76	28	.....	63	405
Colorado	23	30	29	+ 26.0	6	.....	23	.....	2	31
Florida	5	4	3	— 40.0	.....	.....	3	1	.....	4
Georgia	2	.....	2	.....	1	.....	1	.....	.....	2
Illinois	357	442	301	— 15.6	260	18	23	58	80	439
Indiana	45	78	83	+ 84.4	33	14	36	.....	17	100
Iowa	.....	3	2	.....	2	.....	.....	.....	.....	2
Kansas	205	283	287	+ 40.0	219	39	29	20	12	319
Kentucky	73	61	55	— 24.6	24	2	29	.....	2	57
Louisiana	193	215	184	— 4.6	161	14	9	11	36	231
North Louisiana	72	60	36	— 50.0	26	3	7	1	.....	37
South Louisiana	121	155	148	+ 22.3	135	11	2	10	36	194
Michigan	183	199	175	— 4.3	125	19	31	11	28	214
Mississippi	11	38	31	+ 182.0	21	6	4	2	2	35
Missouri	.....	18	18	.....	6	2	10	1	1	20
Montana	49	34	42	— 14.2	14	.....	28	.....	6	48
Nebraska	1	14	20	+1900.0	16	2	2	.....	.....	20
New Mexico	144	163	142	— 1.4	104	12	26	.....	16	158
New York	31	120	95	+ 206.4	76	9	10	10	10	115
Ohio	126	191	202	+ 60.3	129	43	30	10	10	222
Oklahoma	391	372	368	— 5.8	268	41	59	51	32	451
Oregon	.....	1	1	.....	.....	.....	.....	.....	.....	.....
Pennsylvania	158	393	415	+ 162.0	323	52	40	20	11	446
South Dakota	.....	1	2	.....	1	.....	1	.....	.....	2
Tennessee	.....	3	6	.....	2	.....	4	.....	.....	6
Texas	1,140	1,261	1,303	+ 14.2	1,026	99	178	50	255	1,713
East Texas Field	11	15	14	+ 27.2	11	.....	3	2	2	18
East Texas Border Counties	5	10	13	+ 160.0	6	2	5	1	.....	14
Rest of East Texas	38	42	45	+ 18.1	19	6	20	3	4	52
North Texas	162	231	250	+ 54.3	194	14	42	2	105	357
South Texas	300	307	305	+ 1.6	242	27	36	23	76	404
Corpus Christi Area	172	158	156	— 9.3	135	10	11	11	38	205
Laredo Area	70	84	85	+ 21.4	62	14	9	8	26	119
San Antonio Area	58	65	64	+ 10.3	45	3	16	4	12	80
Texas Gulf Coast	135	143	151	+ 11.8	143	7	1	11	64	226
Texas Panhandle	81	104	122	+ 50.6	94	19	9	1	40	163
West Texas	326	298	291	— 10.7	261	11	19	7	36	334
West Central Texas	82	111	112	+ 36.5	56	13	43	.....	33	145
Utah	1	3	7	+ 600.0	5	1	1	.....	.....	7
West Virginia	63	126	116	+ 84.1	90	16	10	10	10	136
Wyoming	72	69	61	— 15.2	11	2	48	.....	7	68
Total United States	3,630	4,472	4,327	+ 19.2	3,184	469	674	256	708	5,291

production currently is averaging around 6000 barrels daily.

Having been stimulated by the campaign in adjoining Illinois, drilling in Indiana has been three times as great this year as last year, the 128 completions in the first four months of 1940 having compared with only 41 in the corresponding months of 1939.

In response to strong demand for Pennsylvania grade crude oil, for meeting sharply increased market requirements for lubricants, producers in the Appalachian region have been especially active this year in drilling new wells. Completions in Pennsylvania and New York have been more than twice as numerous as in 1939.

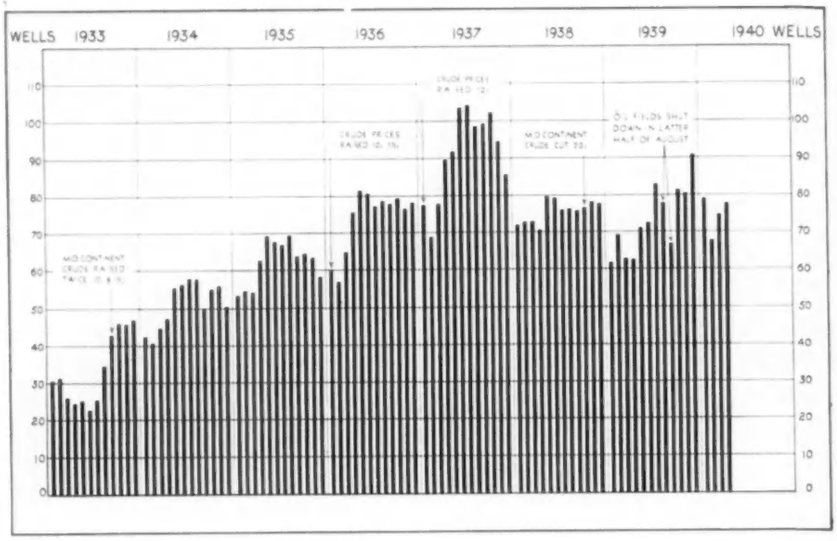
The Rocky Mountain region is furnishing a relatively large amount of drilling, in reflection of the expanded market demand for crude oil there. Wyoming's 55 new wells for the first four months of this year were nearly double those completed in the similar period last year. Montana, meanwhile, showed a 33 percent gain in completions.

Increases in South Louisiana, West Central Texas, and the Texas Panhandle have been between 70 and 90 percent; those in North Texas, North Louisiana, and New Mexico around 50 percent; and that in Kansas 40 percent. Other gains have included those of 21 percent in California, 3 percent in Illinois, 19 percent in Michigan, 1 percent in Ohio, 24 percent in Oklahoma, 12 percent in Texas as a whole, 4 percent in the Corpus Christi area of Southwest Texas, 21 percent in the adjacent Laredo district, 13 percent in West Texas, and 6 percent in West Virginia.

Areas that have had less drilling this year than last year include Arkansas, Colorado, Kentucky, Eastern Texas, the San Antonio district of Southwest Texas, and the Texas Gulf Coast.

Rigs in operation in the United States decreased from 4472 as of April 1 to 4327 on May 1, but the new total was 19 percent greater than that of 3630 for the beginning of May last year. Those figures include wells drilling, rigging up, and temporarily shut down, and details by districts appear in an accompanying table.

Average Daily Well Completions in U. S., by Months



Drilling 25 Percent Higher Than in 1939 and 4 Percent Higher Than in 1937

STATE OR DISTRICT	[1]April, 1939, Total Completions	[2]March, 1940, Total Completions	[3]APRIL, 1940, COMPLETIONS					CUMULATIVE COMPLETIONS, FIRST FOUR MONTHS, 1939 AND 1940						
								Total Wells			Details of 1940 Completions			
			Total Wells	Oil	Gas	Dry	Initial Oil Production	1939	1940	Percent Change	Oil	Gas	Dry	Initial Oil Production
Arkansas	11	14	22	15	1	6	4,815	67	66	— 1.5	49	2	15	17,022
California	86	83	131	119	1	11	70,039	321	389	+ 21.2	324	6	59	240,829
Colorado	3	....	1	....	....	1	.....	9	3	— 66.6	....	....	3	.....
Illinois	253	263	338	296	3	39	251,721	1,117	1,146	+ 2.6	969	12	165	849,715
Indiana	11	21	42	22	4	16	2,132	41	128	+ 212.5	62	18	48	7,218
Kansas	82	118	162	138	3	21	214,828	366	515	+ 40.7	410	12	93	598,859
Kentucky	46	11	28	12	....	16	641	195	80	— 59.0	43	1	36	2,455
Louisiana	70	99	164	128	5	31	35,910	293	502	+ 105.5	376	28	98	82,244
North Louisiana	32	47	61	47	4	10	5,486	124	183	+ 47.6	125	25	33	13,600
South Louisiana	38	52	103	81	1	21	30,424	169	319	+ 88.6	251	3	65	68,644
Michigan	95	93	119	69	....	50	10,127	365	434	+ 18.9	251	9	174	54,052
Mississippi	....	10	16	10	....	6	5,753	1	50	+ 4900	32	1	17	20,815
Missouri	....	....	1	....	....	1	.....	.....	2	.....	....	....	2	.....
Montana	11	2	17	14	....	3	1,703	33	44	+ 33.3	33	2	9	3,726
New Mexico	39	50	84	66	3	15	22,083	177	264	+ 49.2	209	10	45	80,662
New York	[4]38	[4]89	[4]103	[4]102	1	....	434	[4]153	[4]365	+ 138.6	[4]354	4	7	1,783
Ohio	46	57	30	17	7	6	119	240	242	+ 0.8	110	83	49	909
Oklahoma	148	152	250	123	28	99	31,791	588	729	+ 24.0	392	60	277	123,543
Pennsylvania	[4]102	[4]271	[4]203	[4]193	7	3	224	[5-4]550	[5-4]1,125	+ 104.4	[4]960	96	69	852
Texas	671	810	951	664	26	261	408,195	3,026	3,399	+ 12.3	2,421	99	879	1,444,417
East Texas Field	9	21	27	27	....	....	60,950	200	102	— 49.0	98	....	4	195,126
Rest of East Texas	25	26	22	12	3	7	2,862	91	81	— 11.0	35	19	27	13,329
North Texas	113	182	197	128	1	68	80,020	480	743	+ 54.8	496	5	242	276,629
South Texas	189	204	281	164	9	108	50,454	891	918	+ 3.0	564	25	329	195,245
Corpus Christi Area	87	85	131	90	7	34	40,726	399	414	+ 3.7	291	12	111	148,013
Laredo Area	71	100	120	68	2	50	9,440	345	417	+ 20.9	247	13	157	43,969
San Antonio Area	31	19	30	6	....	24	288	147	87	— 40.8	26	....	61	3,263
Texas Gulf Coast	103	89	102	66	2	34	18,457	469	396	— 15.6	281	8	107	74,356
Texas Panhandle	27	49	53	44	9	....	15,863	107	191	+ 78.3	160	26	5	56,987
West Texas	156	173	207	189	1	17	171,221	645	723	+ 13.6	668	4	51	592,056
West Central Texas	49	66	62	34	1	27	8,368	143	245	+ 70.4	119	12	114	40,689
West Virginia	30	34	30	9	17	4	40	168	178	+ 5.9	41	106	31	296
Wyoming	3	9	18	16	....	2	10,503	31	55	+ 77.2	44	3	8	35,629
Total United States	1,745	2,186	2,709	2,013	106	590	1,071,058	7,742	9,713	+ 25.5	7,080	552	2,081	3,599,803

[1] Wells completed in the 5 weeks, or 35 days, ended April 29, 1939.
[2] Wells completed in the four weeks, or 28 days, ended March 23, 1940.
[3] Wells completed in the five weeks, or 35 days, ended April 27, 1940.
[4] Includes water-input wells.
[5] Bradford completions for first three months revised in accordance with The Producer's Monthly.

This view of El Roble 2 shows nature of the country and the location of boilers and tanks.

Deep Venezuelan Producer Larger Than First Indicated

REPORTS from Venezuela last week indicate that Standard Oil Company of Venezuela's El Roble 2, following additional tests, is a considerably larger well than it was thought originally. Roble 2, the deepest producing well in South America, and one of the deepest in the world outside of the United States, according to informaton released by Pantapec Oil Company of Venezuela, part owner, "has been thoroughly tested at two intervals—from 9349 to 9520 and from 8312 to 8348 feet. In the former interval, the well produced at the rate of 1113 barrels of 43.1° gravity oil per day through a 5/16-inch choke. In the latter and shallower interval it produced at the rate of 1816 barrels per day of 42.5° gravity oil through a ½-inch choke, and during the last hour of the test produced at the rate of 2400 barrels per day.

"An earlier test at the interval from 9620 to 9647 feet resulted in a flow at the rate of 189 barrels per day.

"The derrick for El Roble 3 is being erected and hole should be spudded in the early part of next week. This well is located about three quarters of a mile east of El Roble 1.

"A location has been agreed upon for El Roble 4, which is 1150 meters (approximately 7/10 of a mile) north and slightly east of El Roble 1."

First movement of the oil from El Roble 2 has been made but it is not the intention to make regular shipments until completion of a new pump station which will require three or four weeks.

Its location with reference to the Mene Grande pipe line, only five or six miles away, makes the movement of the crude a simple proposition, except for the problem occasioned by the very high paraffine content. The oil has a tendency to jell at 90° F. Storage will

Sketch map of Eastern Venezuela showing more important fields including El Roble. The Gulf-Standard Pipe Line indicated is referred to in the article as the Mene Grande Pipe Line as it is known officially. Map courtesy of Pantepec Oil Company of Venezuela, C. A.

be erected ultimately at Anaco on the Mene Grande line so that the oil can be slugged in batches down to Puerto La Cruz, the line terminal.

The El Roble structure is located only a few miles from the San Joaquin structure and field of Standard Oil Company of Venezuela, referred to erroneously, due to mistake in telegraphic transmission, in THE OIL WEEKLY of April 22 as the "Squin" structure.

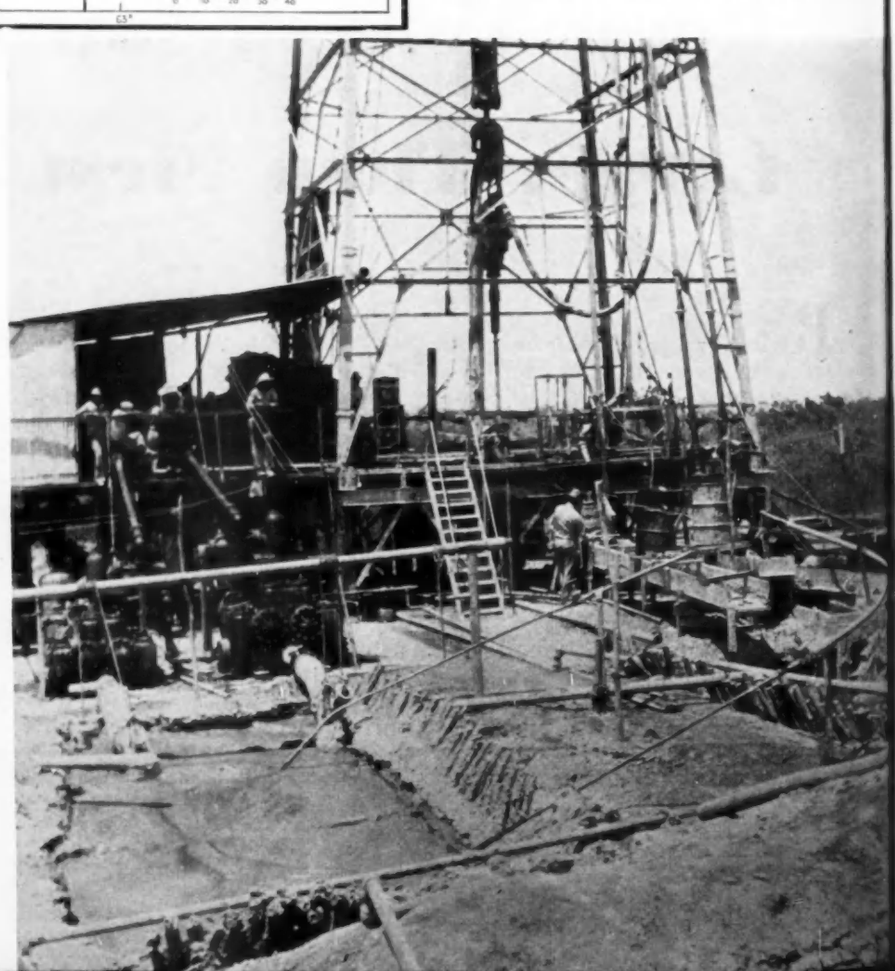
The well is important not simply because it has found production at a greater depth than any other well in Venezuela, but because of the possible size of the structure involved, one of the largest apparently in Eastern Venezuela.

The producing sands in El Roble 2, and in El Roble 1, completed more than a year ago but standing awaiting pipe line connection following its blowout and subsequent control, is of Mio-Oligocene age, Officiana formation.

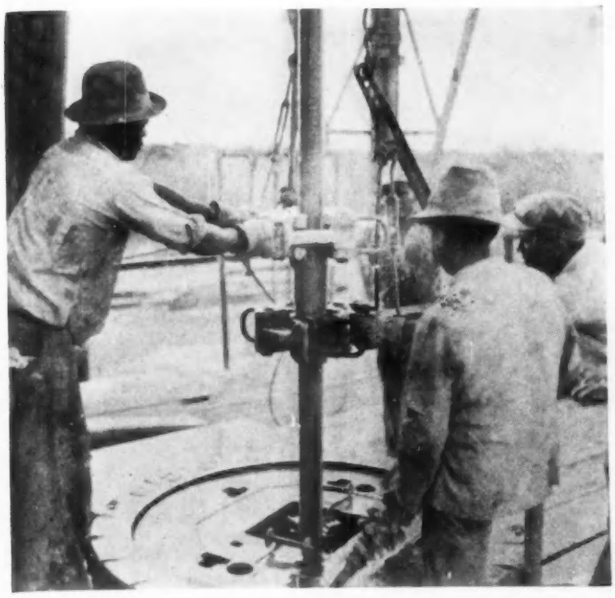
Three sands were cored, the present producing sands and what seemed to be a very promising sand at 9931 to 9979 feet.

El Roble 2 was spudded June 17, 1937, three miles northeast of No. 1 and because it was largely an exploratory test, every precaution against heavy pressures was taken.

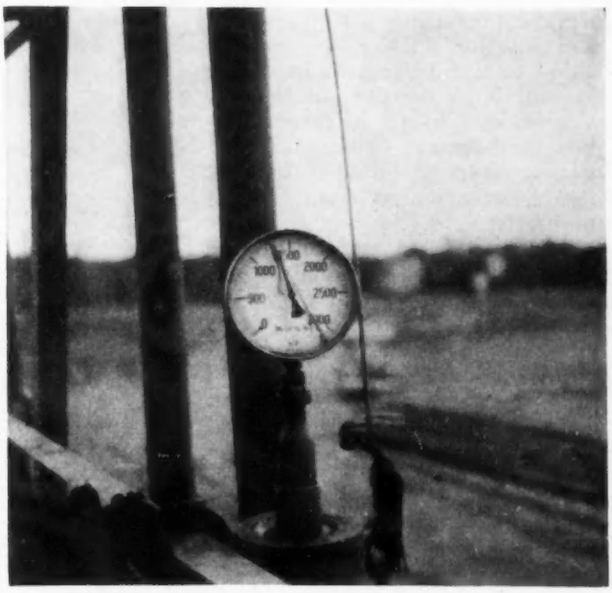
When a sand carrying heavy pressure was encountered at 9931 feet the weight of the mud was



Below—Mud pit arrangement at El Roble 2. At time picture was taken the pits shown were reserve, except the one to extreme left. Shale shaker is at right of picture. Mud traveled through troughs not discernable in picture before flowing in return pit shown at left.



Breaking out drill pipe after drilling below 10,000 feet.



Mud pressure gauge shortly before the well was brought in.

increased immediately to 14½ pounds.

Equipment used on No. 2 was ordinary, standard equipment which had been used in drilling other wells. Drillers were Americans, crews were Venezuelans. Four boilers, 125-horsepower, 300 pounds working pressure, furnished the steam for the 12x12 drilling engine, the standard drawworks, and the two mud pumps, one a 20-inch pump, the other 18-inch. A 132-foot derrick was used.

Three hundred and fifty feet of 18½-inch surface casing was set, 13⅜-inch at 2547 feet; 9⅝-inch at 6395 feet, and 7-inch at 9913 feet. Sand was topped at 9931 feet and at 9979 feet the bit went out of sand into shale. Twenty-two feet of shale was drilled and 8 feet more cored before drilling stopped.

A 4¾-inch flush joint liner was set 2 feet off bottom, and the well tubed with 9950 feet of 2½-inch, external, upset tubing with 75 feet of plain tubing on bottom. Bottom of tubing was 10,025 feet.

The production test was then made in the deepest sand which failed to produce and the well was tested higher up, after being gun perforated.

Because of the high pressure anticipated in the well, the operator had ready for its completion a well-control hook-up, assembled in the United States and shipped down, equipped with 10,000-pound test valves.

The cementing procedure was interesting. When the 7-inch casing was landed there were no returns, due to a "thief" sand, a low-pressure sand at about 7600 feet, which was taking the mud. Two hundred sacks of cement were pumped down the casing through the shoe. This was followed by 1 plug to 9853 feet. The cement was allowed to set 3 hours. Then 1100 sacks of cement were pumped in at 1500 pounds pressure between the 9⅝-inch casing and the 7-inch.

Because of the known temperature and pressure (bottom-hole temperature showed 230 degrees with surface temperature 152 degrees before cementing) as well as the known absorption quality of the mud cake on the walls of the well, the weight of slurry of cement was reduced to allow an excessive amount of water, thus permitting absorption of water by the mud-cake but still leaving the cement of the proper consistency at the time it was being circulated outside the casing. (Slurry weight was 13½ pounds when pumped in.)

As a secondary precaution to

El Roble 1, discovery well of the field, is 3½ miles from No. 2, and was completed more than a year ago at 8123 feet. It is shut in awaiting pipe line connection which possibly will have been made when this is printed. It has not had a conclusive production test but it is estimated that it will produce from one of its sands about 1000 barrels per day. Location is shown on map on page 16.

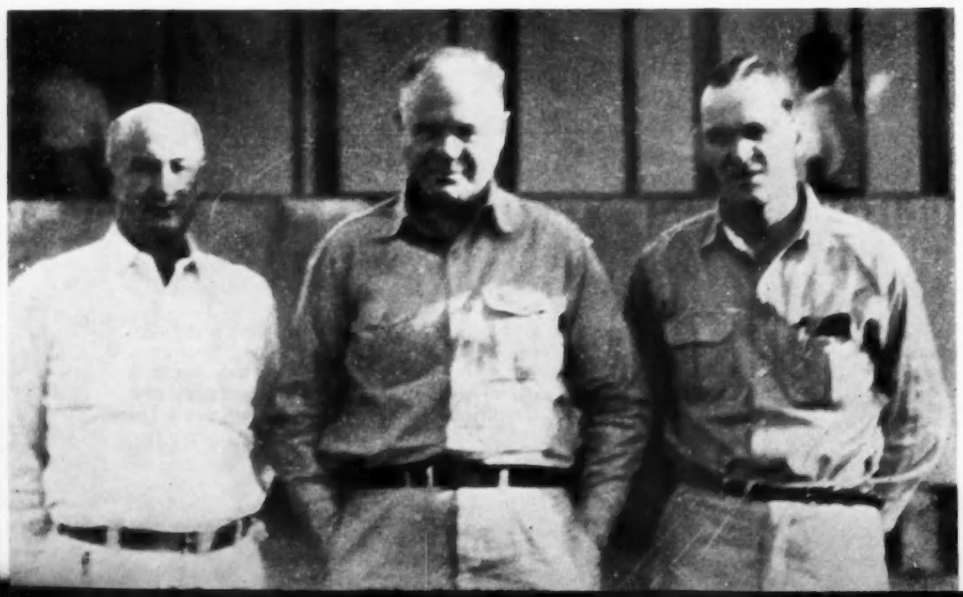
prevent premature setting, tannic acid solution (T.C.A. 5-5-0) was added to the mixing water of the cement. Two percent solution by volume was used. After this cement had set for 48 hours a temperature survey showed that the hole was cemented from bottom to surface.

The concession on which the well was drilled originally was issued to Pantepec Oil Company of Venezuela. Through a joint operating agreement made between Standard Oil Company and Pantepec the latter is developing and will operate the property and Pantepec will receive half of the oil, paying half of the operating costs after a certain number of wells have been drilled.

Part of the bunk houses at Buena Vista camp. Many of the trees shed their leaves in the winter, and the grass dies. During the rainy season grass springs up and the trees are heavy with foliage.

Steel mess-hall building at Buena Vista camp, San Joaquin. Moving pictures and other entertainment also given here.

A typical temporary bunk house at Buena Vista Camp. The "front room" has one or two beds. Then comes a bath room and toilet, in separate compartments and across a small hall from a room designed for hanging clothes (screened against insects) is provided. At the opposite end is another bedroom. Floors are of wood, roof and walls of canvas, windows well screened. Here in the dry season occupant needs a blanket at night. It is warmer in the rainy season, but nights are comfortably cool and days do not get as hot as in South Texas.



Pictured at left are R. B. Kester, superintendent at San Joaquin-El Roble; Art Proudfit, manager of Eastern Venezuelan operations, and Tom Jenkins, assistant superintendent at San Joaquin-El Roble (Standard of Venezuela).

Injection Method for Salt Water Disposal

By BRAD MILLS, Associate Editor

PART III

THIS is the third and concluding article in THE OIL WEEKLY'S three-part series comprising a symposium discussion of procedure and methods employed by East Texas injection systems for salt water disposal. Parts 1 and 2 were published in the April 29 and May 6 issues, respectively.

PREVIOUS articles in this series have reviewed the facts to be considered before attempting any system of injection for salt water disposal and have shown why this practice is receiving such wide-spread acceptance in the East Texas field. Nine companies have completed 13 injection projects there and other installations are under construction.

In addition to the basic data presented, illustrated descriptions of all present injection projects in East Texas are provided. A number of these projects were presented in parts 1 and 2 and the remainder are covered in this article.

Humble's System

Humble Oil & Refining Company has drilled and completed two injection wells for returning the salt water to water formations below the oil zone. A third well was drilled to test disposal possibilities of formations below 5000 feet, but that well was plugged back and completed as an oil producer in the regular Woodbine sand. The company was not among the first to experiment with salt water disposal wells in the field, due to the small amount of water produced by its leases, and even now has only a nominal disposal requirement. It did, however, take an active part in the joint experimental injection effort west of the field in 1936.

Humble's M. C. Thompson 1-S, I. Moore Survey, Smith County, Joiner area, was spudded April 29, 1939, and completed May 28 at 3895 feet. This test was planned and drilled as a salt water disposal well. The 10¾-inch casing was cemented at 1118 feet, an unusually long string of this type. The 7-inch O.D. casing was cemented at 3712 feet. After setting 72 hours, the plug was drilled from 3685 to 3692 feet, and the casing perforated from 3688 to 3689 feet with six shots. A squeeze cement plug-back job was made in order to reinforce the shale break between the oil and water sands. A 7-inch packer was set at 3698 feet and preliminary injection pressures established. At an input rate of 60 barrels per hour, tubing head pressure was 560 pounds per square inch; at 90 barrels per hour, 800 pounds. The tubing was pulled and the hole filled with salt water. The fluid level next day was 795 feet.

The sand section from 3721 to 3795 feet was not suitable for injection operations, and the liner was pulled. The 7-inch casing was reperforated from 3712 to 3718 feet with 29 shots, and from 3692 to 3700 feet with 49 shots. The well was swabbed and the rig moved off. It was not possible to lower the fluid level below 1150 feet, however. Later a slip-type liner packer was set at 3688 feet as a packer seat, and an internal lead seal packer run on 3689 feet of cement-lined tubing. On the following day, fresh water was injected into the annular space to displace the salt water, and the packer was set. The well was completed with an 86-foot, perforated, alloy liner on bottom at 3795 feet, with the packer at 3710 feet.

The surface equipment incidental to handling salt water ahead of injection is simple. Salt water produced by the M. C. Thompson lease is separated from the oil in the gun barrel at the lease tank battery. On entering the salt water treating system from the gun barrel, the water flows under a redwood baffle in a small concrete oil trap and on to a large corrugated concrete slab that aerates the water. From the aerating slab the water flows into the small concrete settling pits, and then into two large concrete settling pits, where all iron and foreign matter are allowed to settle out. The settling pits are all equipped with a vertical redwood baffle, about six inches from the upstream wall of each pit, each baffle guiding the water flowing over the edge of one pit to the

bottom of the next pit. From the large settling pits the salt water flows into a concrete sand filter, from which it flows to the well head through an asbestos-type composition pipe. Total capacity of the pits is about 750 barrels.

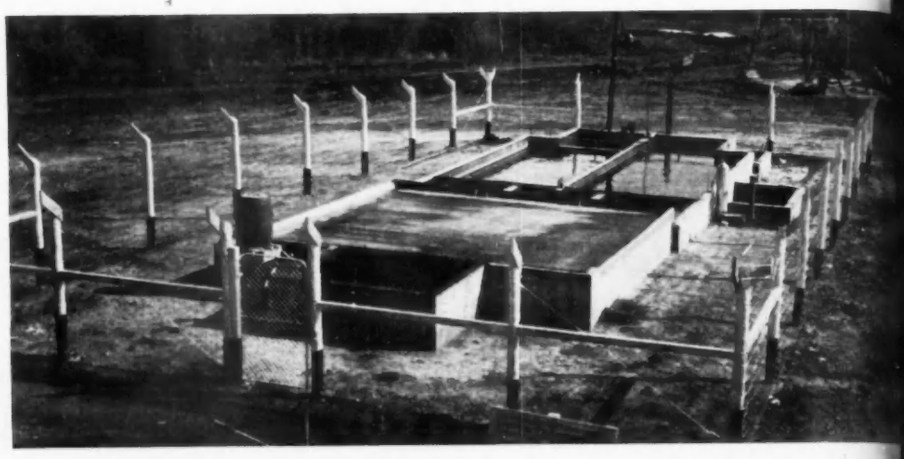
Injection was started in M. C. Thompson 1-S July 11, 1939, and the well has operated intermittently since. Daily injection of salt water has ranged from 50 to 150 barrels, and at the end of January, 1940, only 10,786 barrels had been injected. Original injection pressure was zero, and the current injection pressures range from a substantial vacuum to a few pounds. Injection has not been continuous, due to lack of salt water production and water treating and filter trouble.

Humble Oil & Refining Company's D. Johnston A1-S, J. R. Crosby Survey, Gregg County, was drilled from the surface as a salt water disposal well. The 10¾-inch casing was cemented at 907 feet, 7-inch at 3688 feet, and the well originally drilled to 3768 feet. Mechanical trouble developed, however, and a sidetracking job was necessary. Because of cement retainer difficulties when cementing the hole to reinforce the shale break at 3662 feet, the hole was plugged back from 3642 to 3606 feet with 25 sacks of cement. After the cement had set 48 hours, the hole was sidetracked, a 6¼-inch hole drilled to 3660 feet and 4¼-inch hole continued to 3668 feet. A drill-stem test was made and a 6¼-inch hole continued to 3692 feet. A blank liner with back-pressure valve on bottom, 18 feet of cadmium plated coupling on top, and 278 feet of 5½-inch casing with all joints welded, was cemented on bottom. Drilling was continued to 3734 feet with 4½-inch bit, 3678 feet of 3-inch cement-lined tubing run with slip-type liner hanger on bottom and with packer set at 3683 feet.

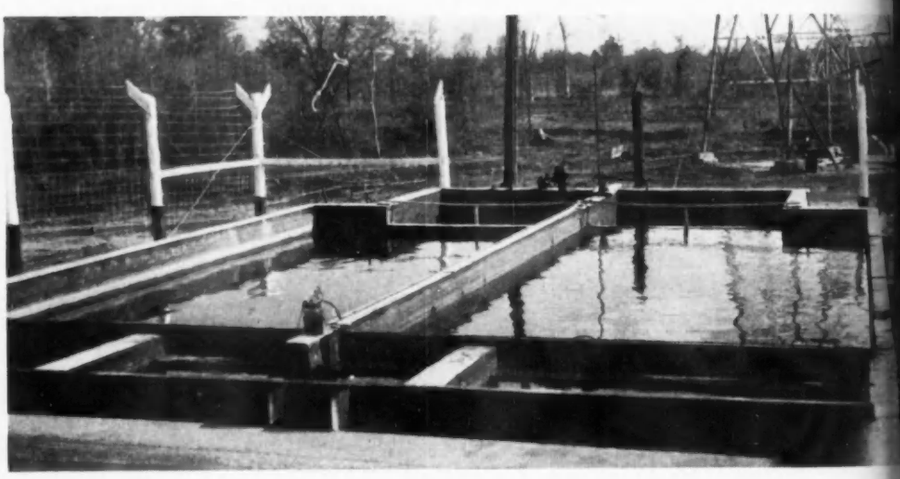
The surface equipment at Johnston A1-S is the same as at M. C. Thompson 1-S, except that the salt water is separated from the oil and gravitates through a 4-inch siphon direct into the oil traps of the treating plant. It then spreads over a large corrugated concrete slab to aerate the water. The precipitation of iron principally occurs in a circular vat that receives the salt

Humble Oil and Refining Comp

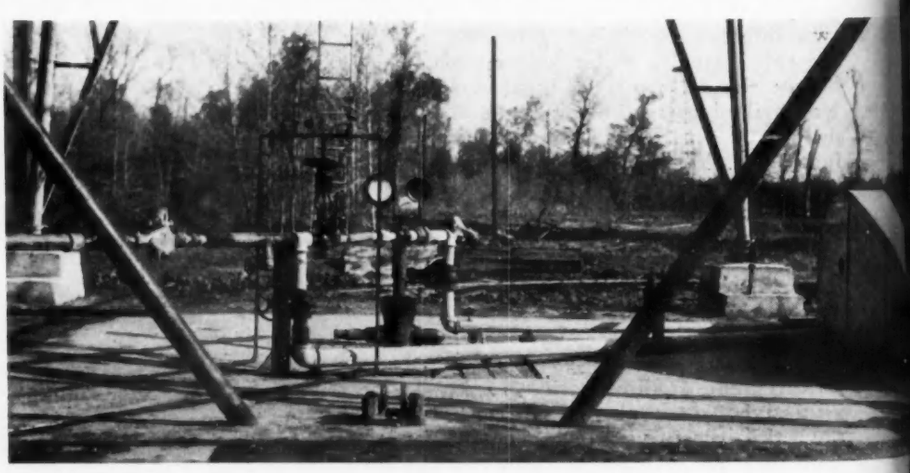
M. C. THOMPSON LEASE



Humble Oil & Refining Company's M. C. Thompson salt-water-disposal plant consists primarily of big aerating slab and built-in filters. Injection well in background.



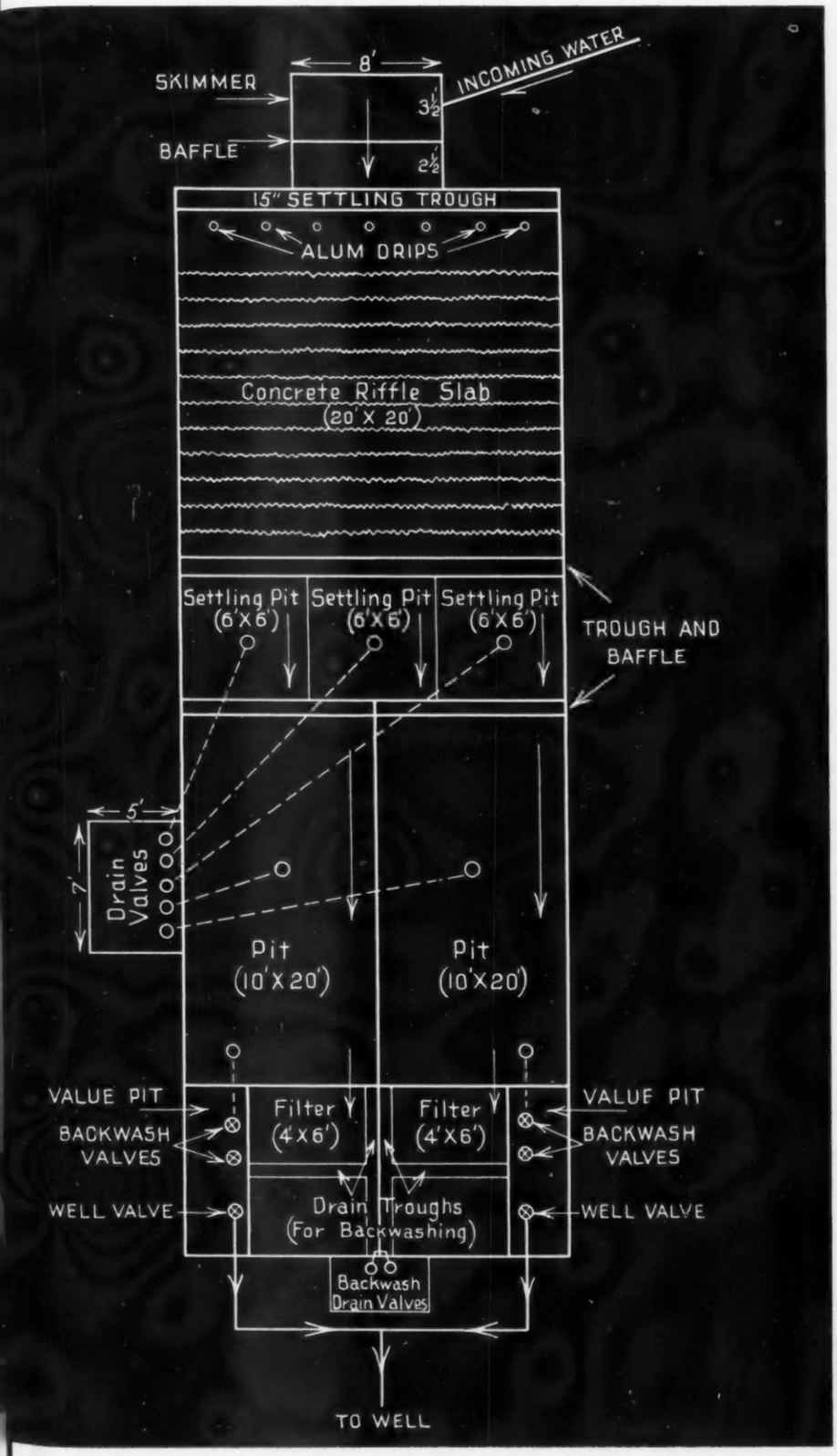
Closer view, showing three small and two large settling pits, and filters beyond. The tank and small jar in center are temporary equipment items for using chlorine.



Humble Oil & Refining Company's Thompson 1-S has been taking salt water satisfactorily, but only a limited quantity has been available. Pump is shown at right.

Company's Injection System

LEASE



Construction details of Humble Oil & Refining Company's M. C. Thompson plant.

water after the latter has been subjected to a whirling motion.

Injection of salt water started July 28, 1939. The well has been operated intermittently since and has taken from 3000 to 7000 barrels of salt water monthly. Original injection pressure was under a vacuum of 27 inches of mercury, but present injection pressures range from 200 to 300 pounds at the wellhead. The cumulative amount injected to February 1 was 36,560 barrels. Injection has not been continuous, due to lack of salt water, water treating and filter troubles. A coagulant is added to hasten precipitation of iron and some of the calcium carbonate, prior to injection of the salt water.

Humble Oil & Refining Company drilled W. W. Holland 37, Thomas Allen Survey, Upshur County, as an experimental well but it was not completed as a salt water disposal project. This test was drilled to 5363 feet, the Paluxy sand having been logged from 5020 feet to bottom. Poor sand conditions and subnormal porosity revealed this portion of the Trinity series as unsuited to salt water disposal purposes. The well was plugged back and completed as a Woodbine sand producer. This test was important from several angles.

Sinclair Prairie's Wells

Sinclair Prairie Oil Company completed two salt water disposal wells during 1939, both having been completed originally as oil producers. They were deepened to water zones below the oil sand, and salt water injection has been at levels below impervious shale beds that prevent vertical movement of the injected fluid.

The company's Bunch-Wilson 9, Joiner area, Smith County, was deepened to 3971 feet and completed as an injection well. Originally an oil producer in the Woodbine sand, this project was converted into a salt water disposal well under favorable conditions. The 7-inch oil string had been cemented at 3729 feet, and after deepening to 3971 feet a 5-inch short string or blank liner was cemented at 3863 feet. A string of 3-inch cement-lined tubing was run to about 3863 feet.

The surface equipment used in connection with Bunch-Wilson 9 is simple and largely mechanical. Salt water from the various wells is brought to a central pit located

Sinclair Prairie's Injection System

BUNCH WILSON LEASE

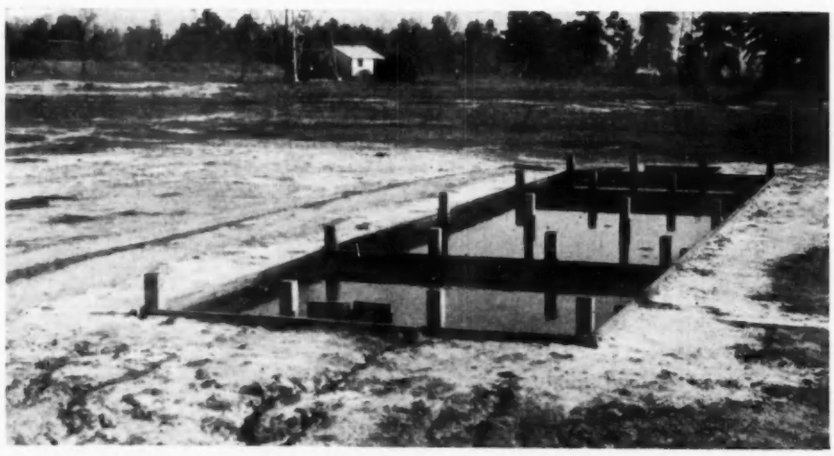
Sinclair Prairie Oil Company uses a flume 3 feet wide and 400 feet long between receiving and settling pits at its Bunch Wilson plant. Aeration is a prime requirement here.

Detail view of construction of the 400-foot flume carrying salt water from the receiving pit shown on the hill in the background to the settling pit. Note turbulence of dropping.

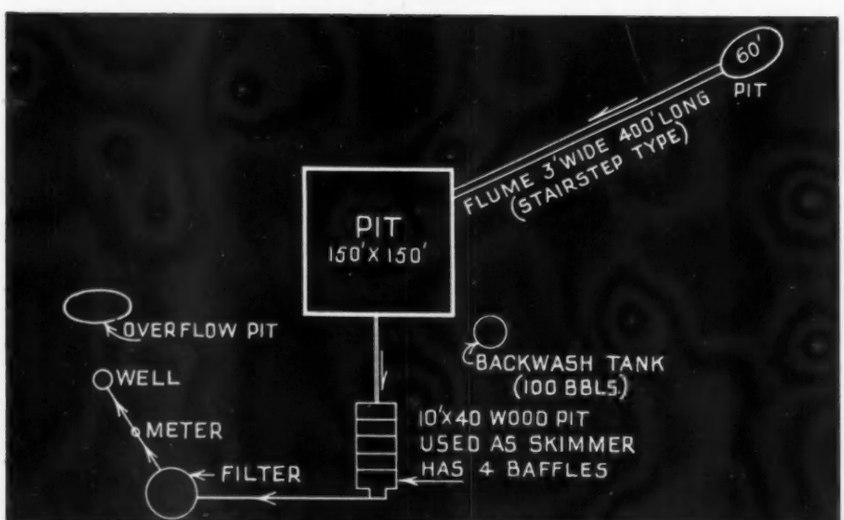
at a satisfactory elevation. The water flows from the small pit, via a flume 400 feet long and three feet wide, to a settling pit 150 feet square. The flow from this large pit is to a 10-foot by 40-foot wood pit that is used as a final skimmer. The flow is then to a filter and to the injection well. The long wood flume is built with a stair-step effect to increase aeration of the water, while the skimming pit is equipped with four baffles. The flow from the last pit to the wellhead is through cement-lined pipe. Injection has been largely by gravity, but a low pump pressure has been applied on occasion. This well had disposed of 784,052 barrels of salt water on February 1, and had handled up to 6000 barrels daily for short periods. Total water injected during January, 1940, was 190,106 barrels.

An overflow pit is provided to handle excess salt water normally intended for injection into the well. A backwash tank for cleaning the filter is also provided, the backwash water going to the overflow pit. The iron content of the salt water is reduced from about 15 parts per million to less than one part per million by aeration and settling methods.

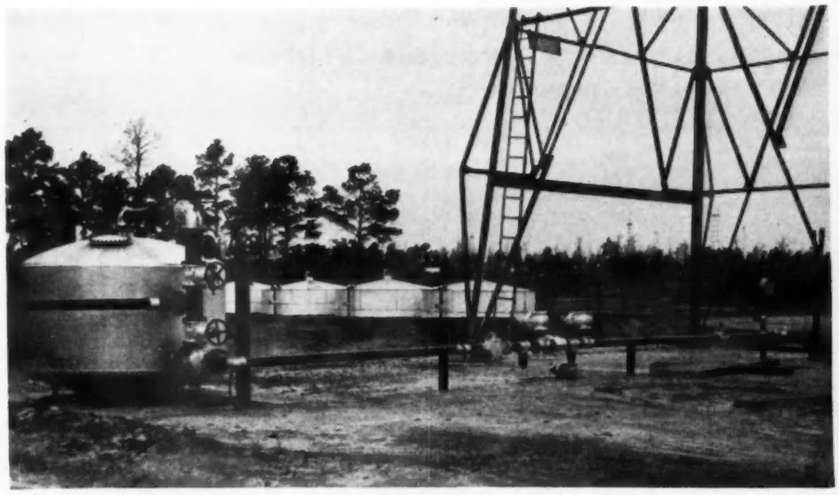
Sinclair Prairie Oil Company's Amanda Wiley 9, James Jordan Survey, Joiner area, Smith County, was completed late in 1939 as a salt water injection well, having been a converted oil well. Origi-



This 10x40-foot skimmer is placed between the main settling pit and the filter.



Plan drawing shows the course of salt water. Plant has handled 5000 barrels daily.



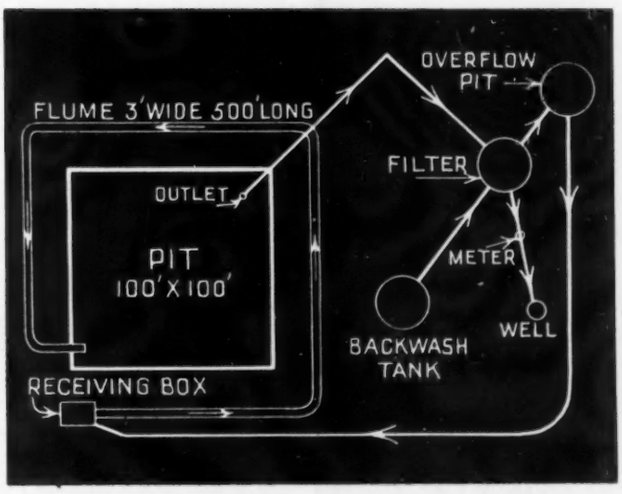
Filter, meter and injection well, Bunch Wilson 9. Injection here is by gravity.

nally completed as a weak oil producer in the late part of 1932, the well showed only a small thickness of oil sand between 3795 and 3798 feet. This project carries a full string of 8⅝-inch casing to 3768 feet. In converting the well, the hole was deepened to 3998 feet and a 6⅝-inch liner or short string cemented at 3882 feet. The 3½-inch cemented tubing was run to the bottom of the liner.

The surface equipment incidental to salt water injection is a simple arrangement. Salt water from the various wells comes to a small receiving box, then flows through a flume or wood ditch that is 500 feet long and three feet wide. This flume is built around the settling pit, the latter being an earthen container 100 feet square. The fall of the flume is very gradual, the water being well aerated during its flow around the pit. The water pours into one corner of the pit and is released from the diagonally opposite corner. The flow is through lined pipe to the filter, and from the filter to the well. Sand and gravel are used as filtering agents. A backwash tank is provided for cleaning the filter, this being ac-

Sinclair Prairie's Injection System

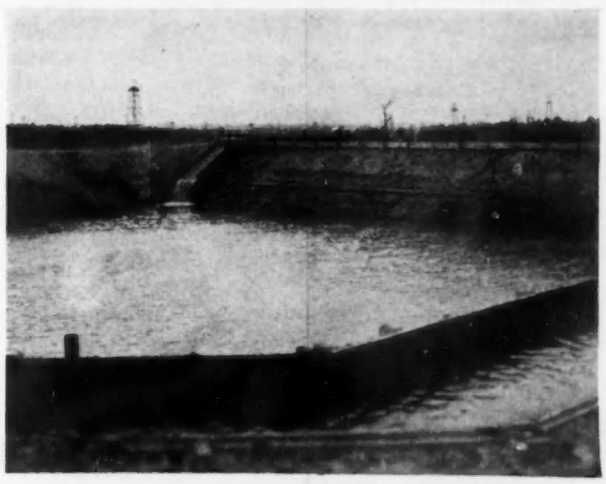
AMANDA WILEY LEASE



Water from the various wells on Sinclair Prairie Oil Company's Amanda Wiley lease come to a small receiving box (above), first step in aerating, settling.

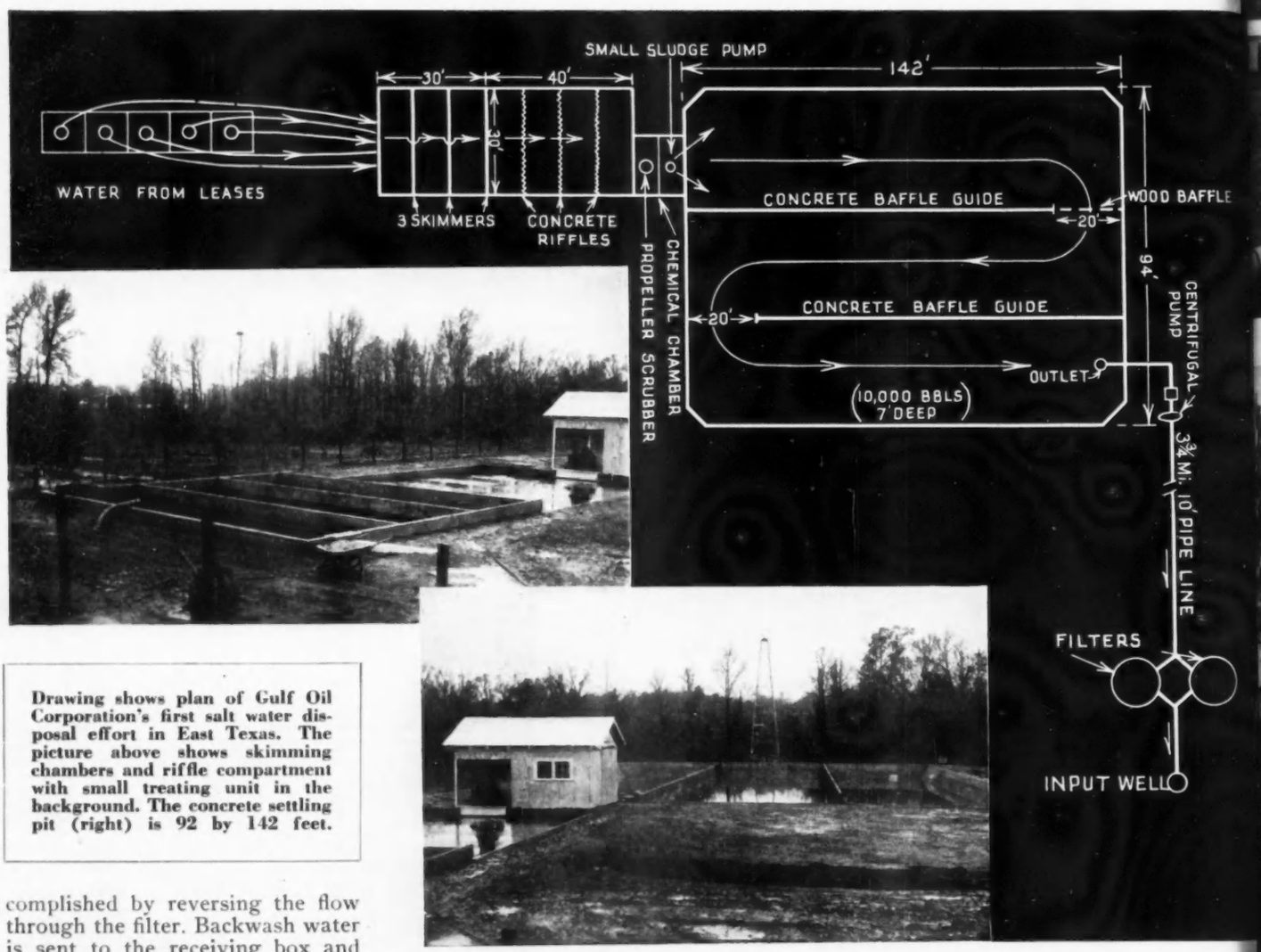
Sketch shows plant layout on Amanda Wiley lease. Main settling pit is on a hill above injection well.

An earthern pit (right) 100 feet square, and wood flume 3 feet wide and 500 feet long are chief aerating and settling agents at Amanda Wiley plant. The flume is built around the rim of the pit. Water may be seen entering the pit in background, while the outlet is located in corner nearest to the camera.



Gulf Oil Corporation's Injection System

GRISSOM LEASE



Drawing shows plan of Gulf Oil Corporation's first salt water disposal effort in East Texas. The picture above shows skimming chambers and riffle compartment with small treating unit in the background. The concrete settling pit (right) is 92 by 142 feet.

complished by reversing the flow through the filter. Backwash water is sent to the receiving box and again through regular settling channels.

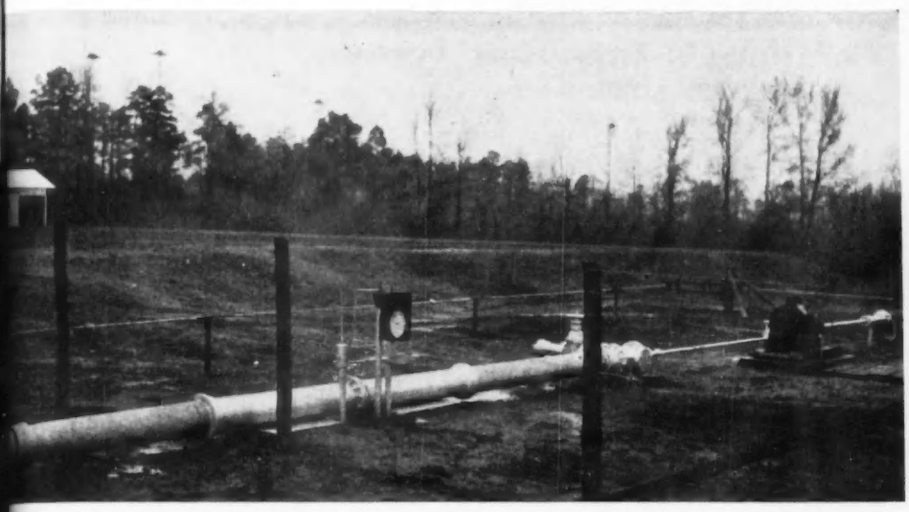
No chemicals are used, the iron and objectionable solids being largely settled out of the salt water by aeration. The remaining objectionable solids are picked up by the filter. Injection was started in September, 1939, and 301,930 barrels had been injected to February 1, 1940. Recent injection has been at the rate of 3000 barrels daily. A vacuum of 27 inches of mercury at the tubing head was shown during the early injection period, and a similar vacuum is now shown, except during periods of high injection. The pump pressure seldom exceeds a few pounds per square inch during the highest injection rates.

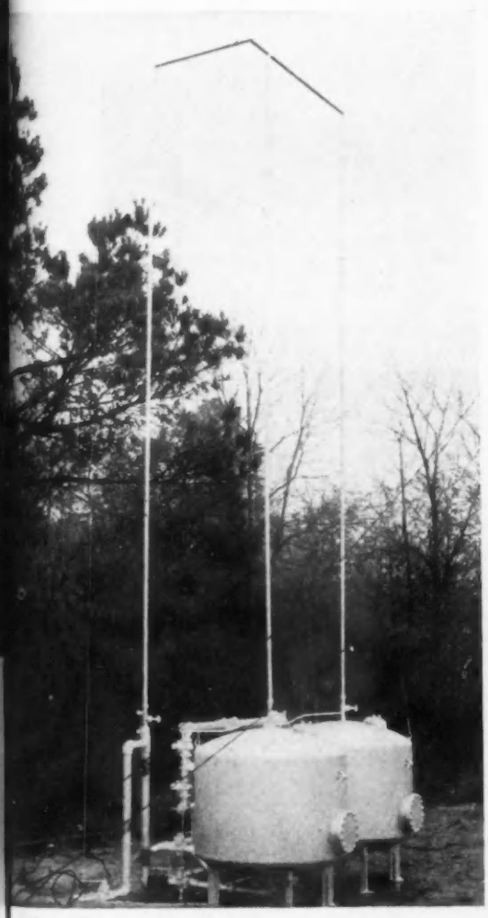
Sinclair Prairie Oil Company is now converting Mayfield A-49, James Jordan Survey, Joiner area, Smith, County, into a salt water disposal well.

Work of Gulf

Gulf Oil Corporation recently completed Trimble-Fee 1, W. G. Belcher Survey, Overton area, Smith County, as a salt water injection well. Location is west of the field and about a mile from nearest oil production. This well was the first in the field to use cement-lined casing, rather than lined tubing. An unusual feature of this 7-inch O.D. lined string was the use of 50 feet of 7-inch, noncorrosive, alloy pipe to protect a porous sand that is not now needed for injection purposes, but may be needed at some future time. The 50-foot section of alloy pipe was placed in the string between 3881 and 3931 feet, and the 7-inch lined casing continued to 4000 feet. The well was drilled to 4191 feet, but the most porous sand section was between 4000 and 4050 feet. If it becomes necessary to inject water at an increased rate, or if the 4000-4050-foot zone should prove an inadequate disposal medium, it will be an easy matter to drill out the 50-foot section of 7-inch alloy casing between 3881 and 3931 feet and inject salt water into this zone that is now protected.

Salt water from the various Gulf leases is brought to a large concrete settling and treating pit in a convenient part of the field. The





The centrifugal pump (right above) picks up aerated water and sends it 3½ miles through 10-inch composition pipe to filters and injection well. Gulf Oil Corporation then filters the salt water in the unit shown at left. The two 2-inch risers are air lines that equalize pressure on both sides of the filter, which prevents violent suction on sand in the filters from the vacuum created by the injection well.

main gathering line is a 12-inch composition conductor. The flow prior to injection is through three concrete skimming chambers, over a series of concrete riffles, through a propeller type scrubber that mixes alum with the water, through a small sludge chamber, and into the first compartment of the main concrete settling pit. The 94-foot by 142-foot settling pit is divided into three equal compartments, the flow of salt water being sent from one side to the other by two concrete baffles. The main pit is 7 feet deep and holds 10,000 barrels. Full details of this flow are shown in the accompanying drawing. The small sludge pump in the chemical chamber is used to transfer the alum sludge from the second to the first compartment, thus preventing the surplus from entering the main settling pit.

The aerated and settled water is picked up by a centrifugal pump and sent 3¾ miles through a 10-inch composition pipe to the filters and injection well located about one mile outside the field. Although the injection well takes water readily under natural hydrostatic head, the pipe line leading from the settling pit to the well attains an elevation at one point of about 50 feet above the pit. During normal injection operations, the maximum line pressure is around 100 pounds. The greatest pressure obviously is at a point just beyond the pump at the pit, since the well pulls a vacuum on the filters and that portion of the line near the well.

An innovation in filter piping has been developed by Gulf engineers to prevent disturbance of the sand face in the filters. Since the well pulls an appreciable vacuum on the filters, air lines are provided to equalize the air pressure between the top of the filters and the main fluid line leading from the filters to the injection well. This is accomplished by use of 2-inch by 30-foot pipe risers from the top of the filters, these risers opening into a common 2-inch drop into the injection line. As the well continues to take water by vacuum after the pump at the pit is stopped, the suction action might ordinarily disturb the sand in the top of the filters. Use of the air riser lines equalizes the air on both sides of the filters. During rapid injection operations the risers are partly filled with water from the top of the filters, but a considerable pressure is required to force the water over the top and down the drop line. A study of the accompanying photograph shows the simplicity of the hookup.

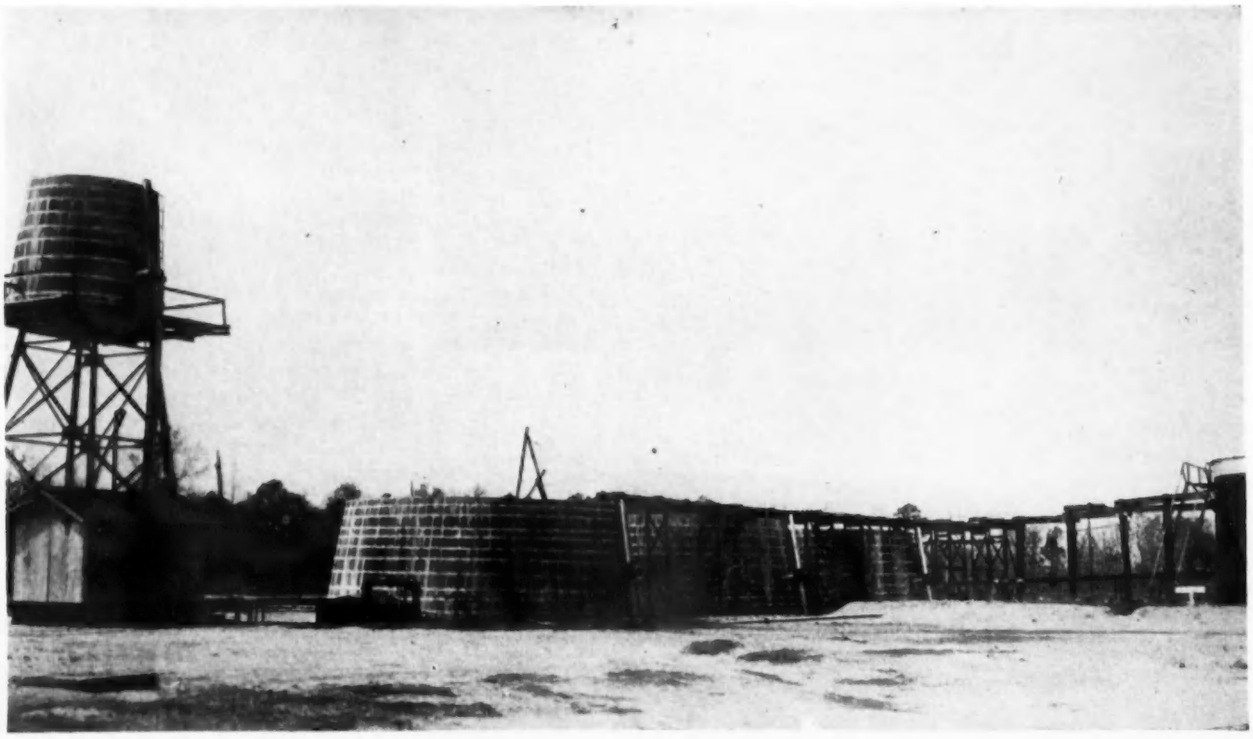
Texas Company Project

The Texas Company's Kersh 5, E. B. Foulkes Survey, Joiner area, Rusk County, has been one of the most successful injection wells in the field. Originally an oil producer in the Woodbine sand, this well was deepened to 3792 feet in water strata. The well carried a 7-inch oil string at 3570 feet. A 5-inch short string was run and cemented between 3450 and 3636 feet, and a string of 3½-inch cement lined tubing run to the top of the short string. This lined tubing would not pass through the 5-inch string, and injection is through both the lined tubing and unlined short string. The well has been taking up to 2000 barrels of salt water daily, with a vacuum of 12 to 28 inches of mercury at the well head.

Three 1750-barrel wood settling tanks and a sand filter are the principal items used for preparing the salt water for injection. The water comes to the wood settling tanks through flumes from steel gun barrel tanks nearby. The three 1750-barrel tanks are "tied together" through the medium of a common outlet pipe to the filter, the water level being fairly equal in all tanks. The water drops down into each tank through holes in the flume. The flow of water in each tank is through a wood conduit to a level near the tank bottom, then around baffles to the outlet. The outlet pipes are about six feet from the tank bottom. The filter is placed a few feet below ground level to en-

The Texas Company's Injection System

A. W. KERSH LEASE

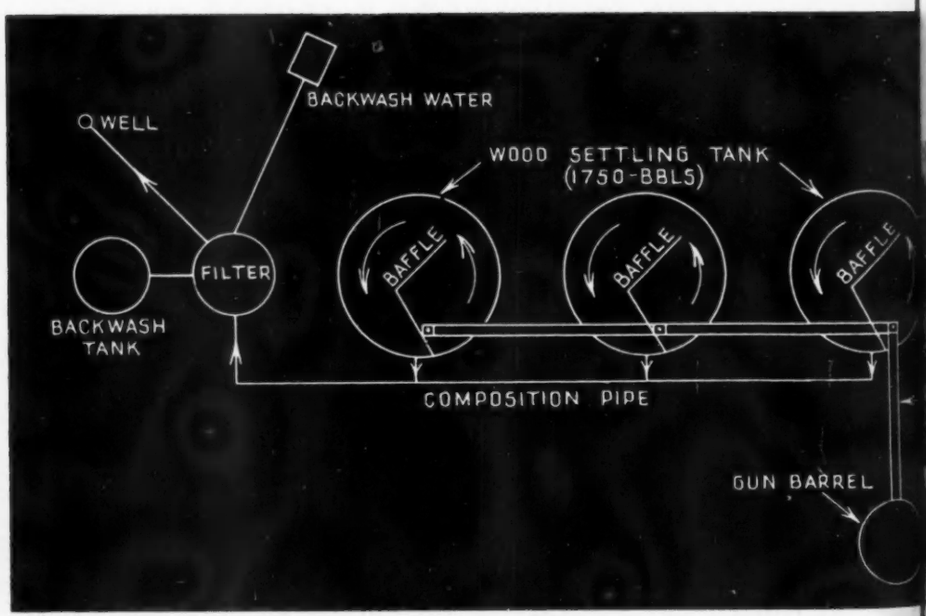


The Texas Company uses three 1750-barrel wood settling tanks equipped with baffles, wood flumes, wood washdown tank, and steel filter at its Kersh lease plant in the Overton area. Flumes are holed to adjust flow of water.

courage a natural flow between the settling tanks and the well. A sand type filter is used. An elevated wood backwash tank supplies fresh water for cleaning the filter.

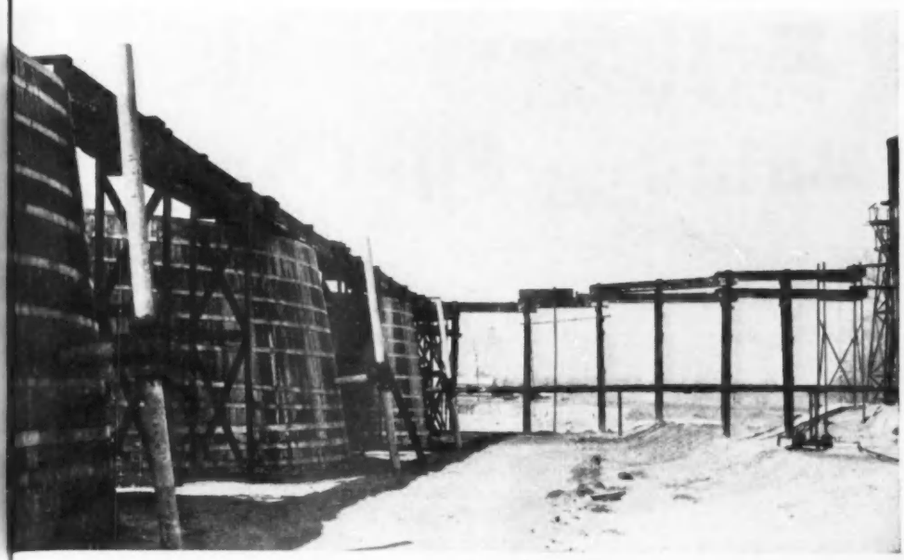
The Texas Company recently completed J. W. Wilson 10, D. Collins Survey, Joiner area, Smith County, as an injection well. The original depth as an oil well was 3652 feet and 7-inch casing was cemented at 3605 feet. A 5-inch short string was run and cemented between 3490 and 3688 feet, after deepening the well to 3820 feet. A string of 3½-inch cement lined tubing was run and set on a packer at the top of the 5-inch short string. The well has been taking water freely under natural head.

The salt water ahead of injection is handled in about the same manner as at the company's Kersh 5, which was previously described.



Compactness and a liberal capacity are features of The Texas Company's A. W. Kersh salt water disposal plant, as is reflected by the plan drawing of it shown here.

Bacteria has been observed in water removed from an injection well that stopped taking water normally. The plugging action might have been caused by bacterial action, but definite proof of such an obstruction has not been established. A connection between the presence of iron sulphide and a form of bacterial action has been suspected but not fully proved. Bacterial matter found on the face of the sand in injection wells undoubtedly has had a plugging ac-



The three main settling tanks are connected to a common outlet which is about 6 feet from bottom of tanks. Composition pipe used.

tion, but it should be possible to reduce bacteria by more careful handling of salt water on the surface. Small quantities of copper sulphate, chlorine and calcium hypochlorite are sometimes added to the water during aeration to check bacterial accumulation. Use of ordinary earthen pits probably encourages bacterial action.

The cost of a complete salt water disposal project, including the surface layout and well, ranges from $22,500 to $40,000. Use of converted oil wells sharply reduces the total outlay. Two disposal projects recently completed each cost around $40,000, but the average is nearer $25,000. The cost per barrel for handling and injecting the salt water ranges from a few mills to 2 or 3 cents, but operators have been reluctant to use a definite cost figure because of such intangible factors as depreciation and lack of experience.

While salt water disposal wells offer a safe and promising outlet for at least a part of the Woodbine water produced with the oil, they cannot be regarded as the full answer to the disposal problem. Both mechanics and economics must be considered as primary factors in any salt water disposal project of this type, and it is possible that either may defeat the plan in the end.

Experience in the East Texas field indicates that salt water disposal wells may be a suitable method in several localities. However, proper conditions must be in existence for the procedure to have possibilities of success.

The Texas Company's A. W. Kersh 5, shown above, has proven itself an excellent injection well, having taken a large amount of water under appreciable vacuum.

The filter here is being backwashed with fresh water, the procedure being to reverse the flow of water to clean the face of the filter medium. The water at first is very dirty but soon runs clean after foreign matter is removed from the face of the sand.

Adjusted Refinery Yields Needed to Balance Fuel Sales

By FRED VAN COVERN
Director, Department of Statistics, American Petroleum Institute

IN ANY attempt to analyse the current situation in the petroleum industry, one is confronted with the necessity of having to net the effect of a number of pressures exerting their forces in different directions and varying degrees.

From the point of view of product demand, the industry seems to be in a good position. During 1939 the total demand for motor fuel increased 4.2 percent. About 11 percent more light fuel oils were sold than in 1938, and residual fuel oil shipments also increased about 11 percent. More lubricating oils and greases were sold than ever before, and the total demand for crude oil and all refined products was greater by about 6.5 percent.

These trends continued into January and while actual figures are not yet available for February and March, nothing of importance seems to have occurred to change the general tendencies, but more detailed reference will be made to the export situation later.

From the point of view of inventories we find some products in firm condition, some in even strong position. Crude oil stocks are less than a year ago. Continued increases have occurred during the past several weeks, however, and have brought the current total close to 250,000,000 barrels—about 20,000,000 above the 1939 low. Light fuel oil stocks are down and so are heavy fuels. Kerosene stocks are in good position and lubricant inventories are also less than a year ago, but finished and unfinished gasoline stocks are at an all-time high, and gasoline is still the industry's principal product. It is very interesting, I think, to compare present inventories by districts with those of a year ago, and particularly interesting to make these comparisons in the light of the home-heating fuel oil situation of the past winter and also the current gasoline export situation. Of the 14,000,000 barrels greater inventories indicated in Table 1, slightly over 6,000,000 are in the Texas Gulf Coast area. Not quite 5,000,000 barrels are in the Interior region, notably in the Indiana-Illinois, and to a considerably lesser extent, the Oklahoma-Kansas-Missouri district, and about 2,000,000 are in California.

NOT enough consideration has been given to the possible effects of the actual progress of consumptive trends, particularly the rapid growth of furnace oil sales until it has become established as a principal petroleum product, along with gasoline. The accompanying study of this important situation, which was presented before a recent meeting of the Interstate Oil Compact Commission, shows how the furnace oil market has developed, how it has created unfavorable inventory relationships and discusses some methods that might be used to cure the undesirable condition.

A condition which had already been of considerable interest to the industry during recent years, but even so, without fulfilling all the possibilities involved, seems during the past winter to have developed its full potentialities. I am referring to the rapid growth in the number of home-heating oil burners in use and the fuel which they consume and the number of automotive vehicles and the growth in their consumption of gasoline, in relation to the yield of these two products from a barrel of crude oil, and the industry's operating practices with respect thereto.

Time was when this was a kerosene industry and gasoline a nuisance product. With the advent of the internal - combustion engine gasoline became the principal product, but more recently furnace oils seem to have pressed for greater recognition. Obviously the industry has not followed any coordinated policy with respect to these changing trends, and while it may not be correct to say that operators did not realize the full potentialities involved, it does seem as though not enough consideration has been given to the possible effects of the actual progress of events.

There are still many important elements in the industry who seem to think of it as one in which gasoline, or motor fuel, is the principal product, probably because they do not have furnace oils for sale. Others seem to have followed the policy of disposing of only that which is incidental to the production of gasoline, while the more

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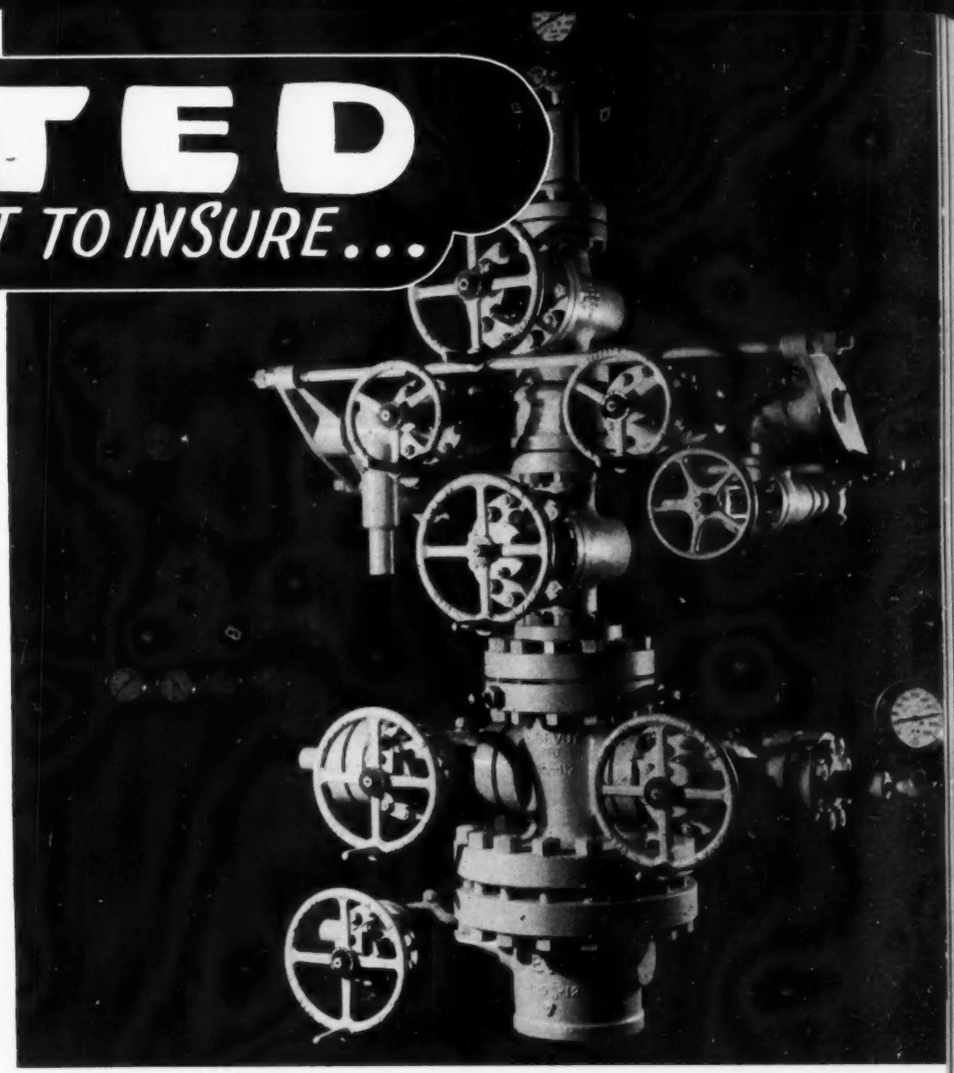

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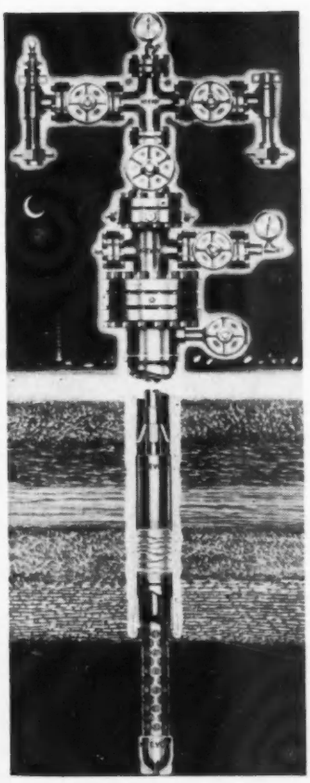

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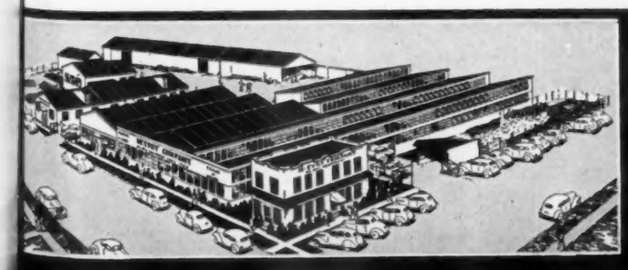

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OIL WELL EQUIPMENT

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TABLE 1

Finished and Unfinished Gasoline Inventories
(Barrels of 42 Gallons)

DISTRICT	Mar. 31, 1939 U.S.B. of M.	Sept. 30, 1939 U.S.B. of M.	Mar. 30, 1940 (Estimated)
East Coast	22,639,000	18,653,000	22,200,000
Louisiana Gulf	2,682,000	1,988,000	3,500,000
Texas Gulf	11,790,000	11,439,000	17,900,000
	37,111,000	32,080,000	43,600,000
Indiana-Illinois-Kentucky	15,780,000	11,778,000	19,600,000
Oklahoma-Kansas-Missouri	8,303,000	6,007,000	9,200,000
Inland Texas	2,351,000	1,919,000	2,200,000
North Louisiana-Arkansas	711,000	488,000	1,000,000
	27,145,000	20,192,000	32,000,000
Appalachian	3,672,000	2,715,000	4,400,000
Rocky Mountain	2,271,000	1,376,000	2,100,000
EAST OF CALIFORNIA	70,199,000	56,363,000	82,100,000
California	16,922,000	14,629,000	19,300,000
TOTAL UNITED STATES	87,121,000	70,992,000	101,400,000

TABLE 2

Motor Fuel and Gas Oil and Distillate Fuel Demand, Number of Burners and Yields

YEAR	Motor Fuel Demand (Barrels)	Gas Oil & Distillate Fuel Demand (Barrels)	Number of Burners In Use (End of Year)	Yield from Motor Fuel Percent	Crude Oil Gas & Dis. Fuels Percent
1933	409,815,000	76,172,000	913,000	43.69	9.16
1934	435,025,000	89,330,000	1,014,000	43.41	10.60
1935	465,423,000	102,277,000	1,155,000	44.19	10.38
1936	510,252,000	123,205,000	1,356,000	44.08	11.78
1937	557,658,000	146,970,000	1,544,000	43.92	12.40
1938	573,112,000	147,090,000	1,658,000	44.30	13.03
1939	597,116,000	163,956,000	1,905,000	44.89	13.06
Increase	45.7%	115.2%	108.7%	.....	.....

TABLE 3

Light Fuel Inventories, Number of Burners and Motor Fuel Comparisons

YEAR	September 30, Gas Oil & Distillate Fuel Inventories (Barrels)	Number of Home-Heating Oil Burners in Use		Finished & Unfinished Gasoline	
		End of Year	Percent Increase	Economic Requirements March 31, Following Year (Barrels)	Actual Inventories (Barrels)
1935	24,272,000	1,155,000	13.9	70,000,000	74,485,000
1936	27,871,000	1,356,000	17.4	73,500,000	81,651,000
1937	27,020,000	1,544,000	13.9	75,000,000	92,277,000
1938	30,860,000	1,658,000	7.4	78,500,000	87,121,000
1939	30,018,000	1,905,000	14.9	82,000,000	*101,000,000
4-Year Increase	.....	64.9%	.....	.....	.....

* March 30, 1940 estimated.

TABLE 4

Percentage Yield of Products From Crude Oil

YEAR	QUARTERS ENDED							
	Gas Oil & Distillate Fuels				Gasoline (Straight-Run & Cracked)			
	June	Sept.	Dec.	Following March	June	Sept.	Dec.	Following March
1935	9.95	10.18	10.88	12.64	44.04	44.80	44.37	42.73
1936	11.09	11.24	12.20	12.99	44.36	44.62	44.50	44.21
1937	11.22	12.09	13.32	13.59	44.00	43.35	44.16	43.25
1938	11.95	12.90	13.67	14.10	44.05	45.06	44.76	44.74
1939	12.65	12.16	13.43	....	44.56	44.87	45.34	....

general practice seems to have been to establish furnace oil as a principal product, along with gasoline, until the home-heating oil market has grown to such an extent that it now demands an important segment of each barrel of crude processed.

Yield Flexibility Needed

That the burning of petroleum oils in home-heating units is proper economic use of such oils can hardly be denied. Their use seems, however, to have outgrown or at least to have increased faster than the ability to build into refineries the necessary flexibility as between the required production of gasoline and these light fuels; or, is their rapid growth and the present situation the logical outcome of the industry's operating practices of the past in conjunction with the relationship which has existed between the price of the two as finished products, and the economic worth of cracking stock. Regardless of how it was brought about, the industry has, nevertheless, with it today the very important problem of how more nearly to balance their combined supply and demand. And, it can hardly be denied that as any given portion of the barrel of crude oil moves towards principal product distinction, that trend carries with it the responsibility of assuming, for that particular fraction, a corresponding liability in relation to the cost of the raw material required.

Perhaps the flexibility necessary does exist within the limits of present facilities and I will come to that again later. Is it merely a question of shifting yields, or is it more complicated than that? Does the question of octane rating of gasoline enter? Should calculations of crude oil requirements be placed upon a combination yield basis? It may be that the situation merely requires a change in method of operation, and the building up during the summer months of larger inventories of these fuels before the winter period sets in. Up to the present time the industry seems to have chosen to make furnace oils as the requirements of the season dictated rather than build up inventories in anticipation of future sales.

From the figures contained in Table 2 one may note how the growth in the demand for motor fuel and furnace oils has progressed in relation to each other and in relation to the yields of these

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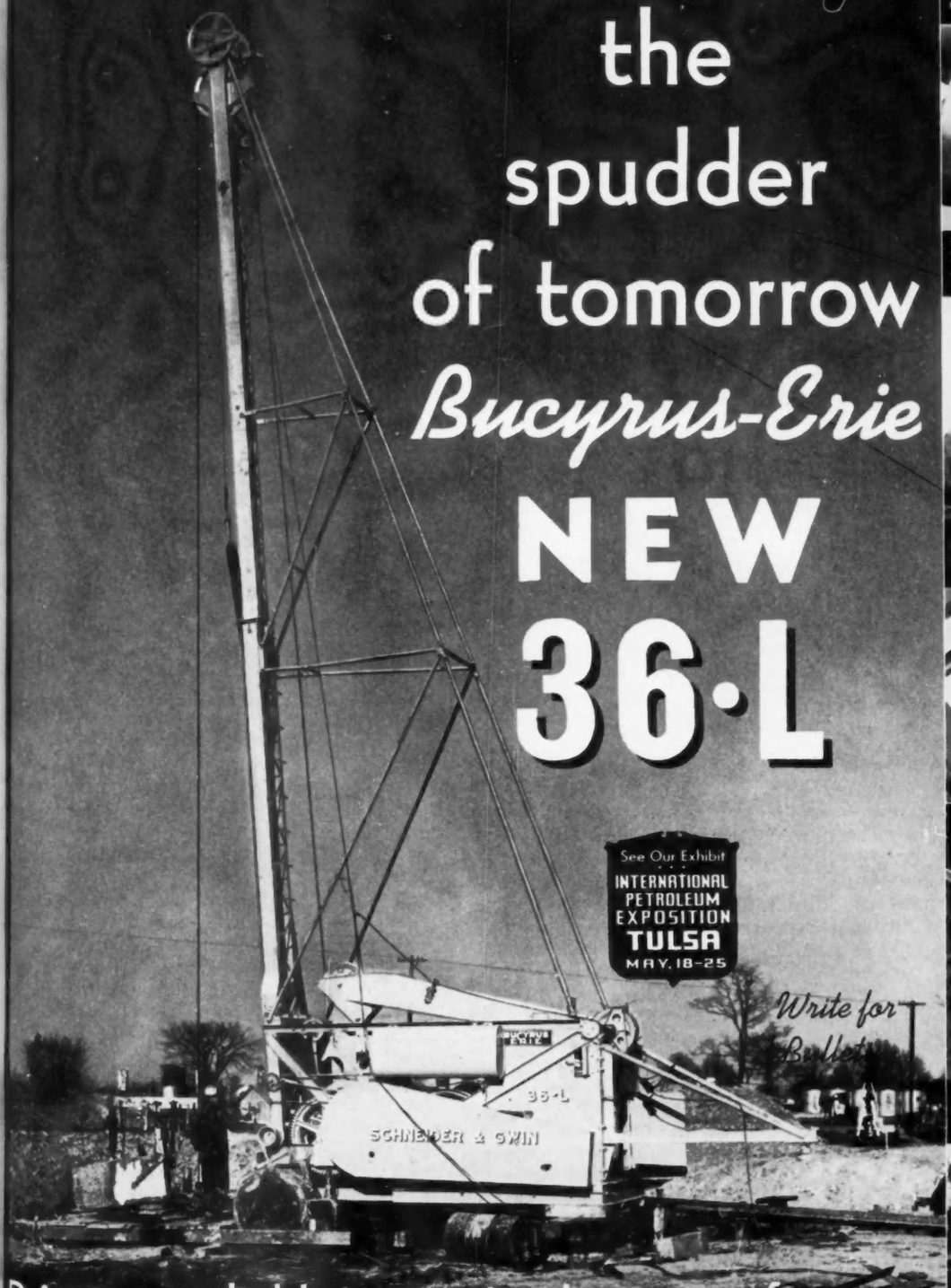

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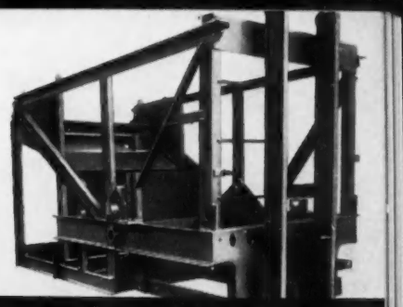
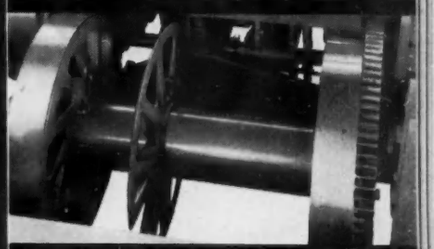
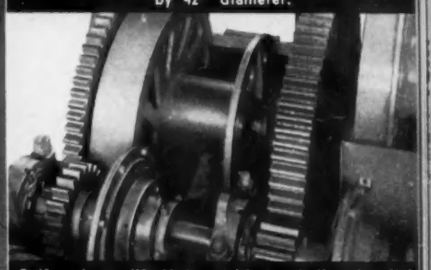


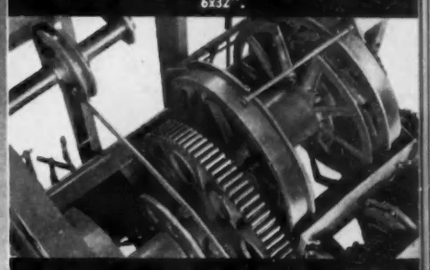
Strong, rigid, trussed, all steel, welded, box fram holds machinery in enduring alignment. Flat bottom no projections, slides easily to platform or truck



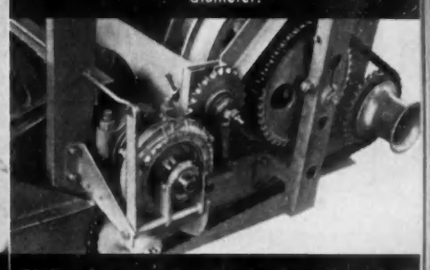
Bull reel carries up to 9,400' of ¾" line, hoists 27,800 lbs., pulls 3,500 lbs. tools from 3,000' in minutes. Big dual equalized brakes each 6" wide by 42" diameter.



Calf reel can lift 30 tons with 6-part line, has hoisting speeds to 460 F.P.M. Center line of block automatically carried over center of hole. Brake Drum 6x32".



Sand reel will pull 7"x30' bailer from 3,000' in minutes. Dual equalized brakes each 4" wide 36 diameter.



Chain drive on sand reel. All drums free wheeling with two speeds and reverse with friction clutch control.

Trailer mounted unit weighs about 23,000 lbs., hauls on highways at 40 M.P.H. or more. Two men can set up derrick in 20 minutes.

Bucyrus-Erie

SOUTH MILWAUKEE, WISCONSIN

TABLE 5

Percentages of U. S. Domestic Demand for Gas Oil and Distillate Fuel Oil and Domestic Heating Oil By Geographical Subdivisions

(Compiled from Bureau of Mines.)

Sub-divisions:	Gas Oil & Distillate Fuel Oil Percentage of U. S. 1936	1937	1938	Domestic Heating Oil Percentage of U. S. 1936	1937	1938
New England	13.8	14.9	14.9	18.5	18.7	18.5
Middle-Atlantic	33.6	33.5	34.1	40.4	39.8	39.6
Sub-total	47.4	48.4	49.0	58.9	58.5	58.1
North Central	21.5	24.0	24.8	28.7	28.5	28.7
Sub-total	68.9	72.4	73.8	87.6	87.0	86.8
Other States: East of Pacific Coast	16.6	11.4	12.3	9.3	9.3	8.8
TOTAL EAST OF CALIFORNIA	85.5	83.8	86.1	96.9	96.3	95.6
Pacific Coast	14.5	16.2	13.9	3.1	3.7	4.4
TOTAL UNITED STATES	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 6

Export Shipments of Crude Oil and Principal Refined Products

(Barrels 42)

PRODUCT	Five-Month Period Ending January, 1939	January, 1940	Per-centage Change	Late Developments February, 1939	February, 1940	Per-centage Change
Crude Oil	27,319,000	28,053,000	+ 2.7	4,810,000	3,327,000	—30.8
Gasoline	20,813,000	15,645,000	—24.8	2,909,000	1,903,000	—34.6
Kerosene	3,433,000	3,294,000	— 4.0	532,000	299,000	—43.8
Light Fuels	10,360,000	12,434,000	+20.0	2,131,000	1,223,000	—42.6
Heavy Fuels	7,709,000	6,495,000	—15.7	925,000	737,000	—20.3
Lubricants	3,793,000	5,565,000	+46.7	680,000	1,090,000	+60.3
Total principal Refined Prods.	46,108,000	43,433,000	— 5.8	7,177,000	5,252,000	—26.8
Total Exports indicated	73,427,000	71,486,000	— 2.6	11,987,000	8,579,000	—28.4

products from a barrel of crude oil.

It is readily apparent from a study of the figures that the number of home-heating oil burners in use has grown tremendously over the last several years, to such an extent, in fact, that while gasoline increased about 45 percent during the six-year period from 1933 to 1939, gas oil and distillate fuel oil demand, of which furnace oils comprise the largest single item, increased more than twice that much, or about 115 percent.

Further light is thrown on this situation when a study is made of the inventories of these light fuels at the beginning of the past several winters. In spite of an increase of over 17 percent in the number of burners at the end of 1936, compared with 1935, the industry entered the 1936-1937 winter season with only about 3,500,000 barrels greater light fuel inventories; in the face of an additional 14 percent increase in burners in 1937 stocks of these oils were less entering the 1937-1938 winter than in the previous year. The situation was not as bad in relation at the beginning of the 1938-1939 winter but at the opening of the past heating season stocks of furnace oils actually were less in comparison with those of a year before even in face of another increase in the number of burners of close to 15 percent. In other words, the figures indicate that on September 30, 1939, inventories entering the winter season were only 24 percent higher than on September 30, 1935, in spite of an increase in the number of burners to be supplied of about 65 percent, and these figures become particularly significant when one realizes the relationship between a home-heating burner and the average automotive unit. My estimates show that the average burner will consume approximately 2300 gallons in a heating season (September to May) while the average automotive unit consumes only about 730 gallons of gasoline a year (1939 calculated average). If there is any doubt as to what such conditions mean with respect to gasoline inventories, the figures in the last two columns of Table 3 are very enlightening.

Of course, it is impossible to forecast the weather and winter temperatures, and that is where one of the greatest difficulties lies. The records that are presently available show that the average temperatures on a degree-day basis for the first five months of this winter season were about 2 percent colder than normally might have been expected, yet 13 percent colder than during the 1938-1939 winter, which heating season continued a trend that began two years earlier in that the three winters prior to the present one were less than normally cold when measured on a degree-day basis.

Statistics on burner sales are readily available and the number of burners that probably will be in use during a given winter is susceptible of fairly easy calculation, but temperatures can only be related to expected normals. It does seem, however, that greater inventories of these oils in relation to the number of burners in use and normal winters are indicated at the opening of coming winter seasons than have been carried in the past. About 60-62 percent of the demand for gas and distillate fuel oils comes during the six-months period from October to March, yet the greatest buildup of inventories of these products during the past five summer seasons was about 12,000,000 barrels in 1936, while the average of the five has been about 10,000,0000. Not only has the industry as a whole chosen to more or less produce these amounts as required but also seemingly, at least, has it elected to retain a fairly uniform gasoline yield, producing approximately 3½ barrels of gasoline to every barrel of light fuels produced. This did not hold during the 1935-1936 winter but seems to have been the practice during more recent years. Table 4 shows a comparison of the yields for the entire country by quarters during the past five years. It will be noted that distillate yields have always increased during the winter season but gasoline yields have not as a general rule shown corresponding declines, at least, not for the industry as a whole.

Up until now we have been talking about this from more or less of a nation-wide point of view, but it can be narrowed still further.

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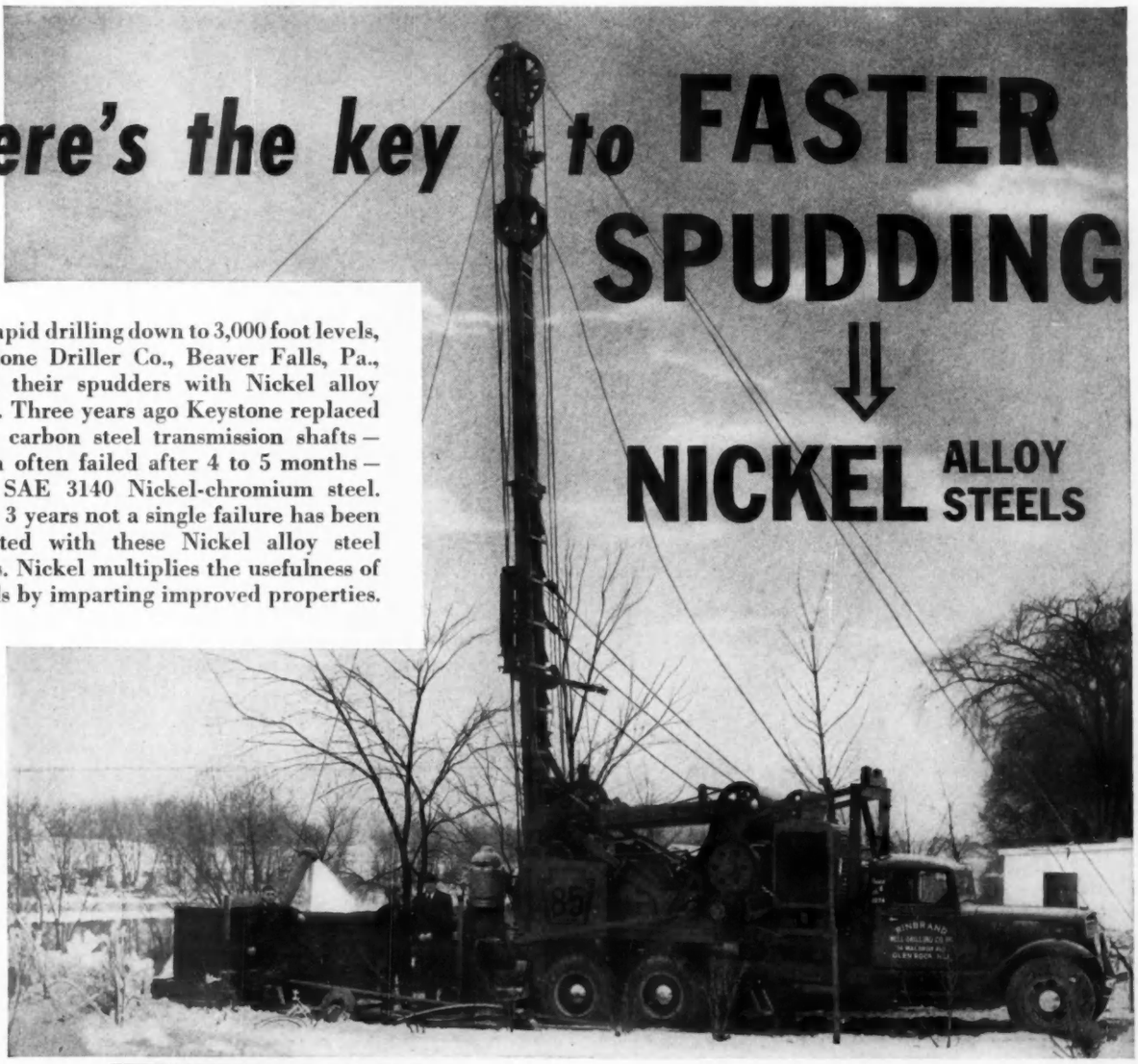
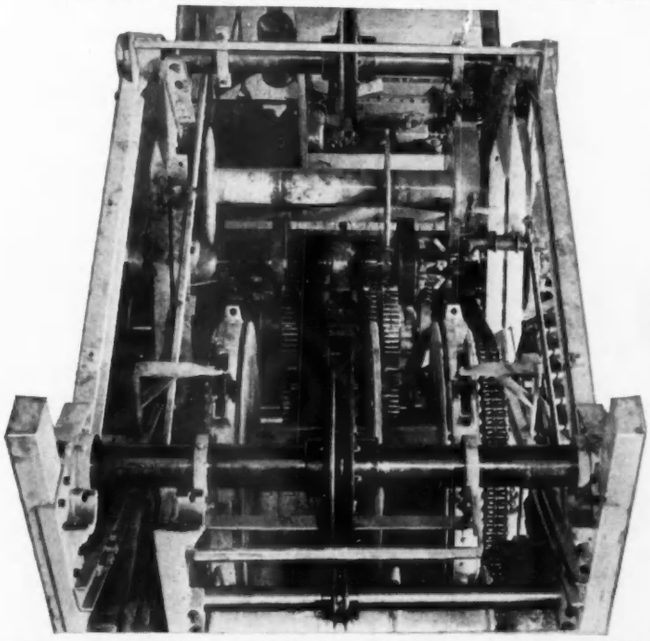
For rapid drilling down to 3,000 foot levels, Keystone Driller Co., Beaver Falls, Pa., build their spudders with Nickel alloy steels. Three years ago Keystone replaced plain carbon steel transmission shafts — which often failed after 4 to 5 months — with SAE 3140 Nickel-chromium steel. After 3 years not a single failure has been reported with these Nickel alloy steel shafts. Nickel multiplies the usefulness of metals by imparting improved properties.





Speeding 3,000 lbs. of tools down 3,000 ft. imposes severe stress on this Keystone transmission shaft. This SAE 3140 Nickel-chromium steel part provides extra strength to handle overloads. Extra toughness of Nickel steel is matched by fatigue resistance. Nickel alloyed metals are economical insurance against needless breakdowns.

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The latest information available shows that about 58 percent of all the home-heating oils used in the United States are consumed in the New England and Middle-Atlantic states. An additional 29 percent are used in the North Central States. In all other areas East of California another 9 percent is consumed, and on the Pacific Coast about 4½ percent.

It is interesting to take another look at the gasoline inventories by refining districts in the light of the statements just made. The areas that supply the greater portions of the heating oils are the areas in which gasoline inventories show the greatest increases, and the only areas in which there is a rather well-defined tendency towards a shifting in yields as between gasoline and light fuel, particularly during the winter season. This has not been as definitely discernible during the summer months, however.

Oklahoma-Kansas, Inland Texas and other districts do not supply any very great portion of the heating-oil market, but neither have they increased their gasoline stocks as much as the others.

California's problem has not been one in which large quantities of heating oils have had to be supplied though it is a fact that the consumption of furnace oils on the Pacific Coast has experienced a relatively large increase during the last few years.

All will agree, I believe, that too much gasoline was produced during the past winter and probably most will agree that the principal reason was the necessity to supply the requirements of furnace oils over and above the possibilities of storage withdrawals.

To what extent the export situation may have entered the calculations of refiners is, of course, difficult to say but it may have been another factor, particularly on the Texas Gulf Coast.

Total exports of crude oil and all petroleum products to all foreign countries during the first five months of the war have actually been less than those of the previous comparable period. Gasoline shipments abroad have been considerably less; lubricants are up as are light fuels; heavy fuels show a decline. Crude oil exports also were up slightly during this period.

Table 6 shows five months comparative figures by products.

And, it might be stated further that when the records are all in for the first seven-month period, the relationships indicated will be even less favorable.

It may be well to point out that the above figures even reflect the very favorable export situation during September and October of 1939 when shipments were the highest on record for any September-October period. It was not until November that exports really began to respond to war conditions and since that time the decline has been accelerated greatly. Preliminary calculations for the month of February made from the manuscripts of the Department of Commerce (official published figures not having been available at the time of this compilation) reveal the latest definite trends. A decline in crude oil exports of 31 percent combined with a fall of 27 percent in refined products to register a total loss of 28 percent in foreign demand upon the American petroleum industry during that month. Only lubricants have so far thrived on the occurrence of hostilities. These latest developments are presented in Table 6 also.

Should Liquidate Gasoline Stock

Regardless of the reasons for the large production of gasoline during the past winter, the industry seems, in a sense, to have borrowed from the amount that under other circumstances would have to be produced during the coming summer and while we are entering the season of the year when increased demand can normally be expected, it is a fact that a large portion of the gasoline which will be required to supply this seasonal increase in the level of consumption, has already been produced, and is included in the large amount of motor fuel presently in storage.

The liquidation of finished and unfinished gasoline during a summer season of normal conditions of stocks with demand at about current levels would be about 18,000,000 barrels. In 1936 the actual liquidation amounted to only 16,700,000 barrels, and in 1937 and 1939 it was even less. During 1938, however, these withdrawals amounted to more than 23,000,000 barrels, the largest amount yet recorded during a summer season.

I believe that 64,000,000 barrels represents minimum working levels of finished and unfinished gasoline inventories on September 30th next. I know that some will think this too low. On the other hand, there are some who will think it high. To me it represents a level below which these stocks cannot go if the industry is to operate economically and conveniently and to load cargoes and other shipments without undue delay. It is a sort of ideal situation, however, one in which each refiner and supplier has not more than his minimum requirements, a condition which probably would never exist.

If actual inventories on September 30th next should represent a level close to economic requirements, a withdrawal considerably larger than any heretofore experienced will have been recorded.

It appears from studies of new car registrations and sales of automotive vehicles that the average number in use during the coming summer will show an increase of about 4½ percent above the number in use during the summer of 1939. It is also felt that the average unit will consume somewhat more gasoline during this season than was consumed by the average unit a year ago. While business activity, according to the Federal Reserve Board Index of Industrial Production, has been on the decline during the past four months, and does not yet show any real tendency towards a reversal of that trend, it is felt, nevertheless, that the rate during this summer will be at a higher level than last. Also that the unsettled conditions in Europe may reflect themselves in some increased travel here.

It was noted earlier that the industry must have approximately 64,000,000 barrels on September 30th next in order economically and conveniently to carry on its business. It is my further opinion that should actual inventories be close to that level at the end of this summer, with crude oil inventories no higher than at present, it will be after the industry has produced very little more than 3,500,000 barrels daily during the six-months period. If actual inventories on September 30th next are approximately equivalent to those of September 30, 1939, or about 70,000,000 barrels, crude oil

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UNIVERSAL ATLAS OIL WELL CEMENTS

production will then have approximated 3,650,000 barrels daily. Thus is indicated the range of production between minimum economic requirements of finished and unfinished gasoline on September 30th next and an amount approximately equivalent to the storage level of the year before.

Conclusion

In conclusion, I should like to leave the following summary of comments with you:

That domestic demand for motor fuel during 1940 probably will not be more than 5 to 6 percent above 1939. Export demand will be considerably lower than last year, and it is interesting to note, in this connection, that for every 6,000,000 barrels approximately that gasoline exports decline, when compared with a year ago, the domestic percentage increase figure is reduced 1 percent. In other words, even though the increase in domestic demand currently appears to be 5 or 6 percent, the expected low level of export shipments will reduce the increase in total demand to about 3 percent.

That motor fuel stocks are at their all-time peak and considerably above normal requirements. This is a clear indication that the industry has borrowed production of gasoline from that which normally would have been produced during the summer season.

That two of the contributing reasons for the currently large motor fuel inventories are the facts that the industry entered the 1939-1940 winter season with inventories of that product already high, but with insufficient light fuel oil in reserve.

That, if an improved set of conditions is to prevail at the end of the 1940-1941 winter, lower motor fuel stocks are indicated at the end of the coming summer, when compared with last year, and higher light fuel oil inventories.

That increased yields of light fuels are not only necessary but possible and entirely within the limits of flexibility of present facilities.

That it is not immediately apparent that the shifting of gasoline and light fuel oil yields within the necessary limits will affect octane requirements.

That this may not be the situation with respect to all refiners, but it would appear that in those districts in which this is an important problem reforming equipment and the other facilities necessary are generally available.

That because of this situation refiners' crude oil requirements during the coming summer will be based on normal gasoline yields, thus permitting the necessary variations of shift from gasoline to light fuel oil within the limits of flexibility of each refiner, thereby not twice allowing for the production of either gasoline or light fuels.

That in those districts where the gasoline-light fuel oil problem is not present, normal yields will prevail in any event.

That if finished and unfinished gasoline stocks as of September 30th next are higher than in 1939, it will be a direct reflection of a continuation of current high levels of crude oil production.

Field Gas Powers Gas-Lift Bob Winch

POWER for the winch which handles the wire line for a gas-lift intermitting device is usually either manual or involves the spotting of the switcher's car so a jacked-up rear wheel can drive the drum.

Where the bob must be lifted through several hundred feet, as is the case with East Texas wells, this winding chore is considerable, and unnecessary time is lost from production whenever the bob must be pulled from the tubing. To speed up this work, one producer uses a gas turbine, utilizing gas at the usual field pressure of around 350 pounds per square inch; the turbine being geared to the winch shaft and provided with necessary gas control valve.

The gas used to power the unit for lifting the bob is slight, being exhausted to the air through a two-inch line extending a safe distance from the well site. Only the pressure of the gas is used, it being found more convenient and expeditious to waste the gas at atmospheric pressure after expansion in the turbine than to attempt to use a smaller amount in an internal combustion engine to operate the winch. The turbine also eliminates all fire around the well during the clean-out or adjustment operation.

Gas-powered turbine, using only pressure value of gas, powers hoist used to control the weighted "bob" operating gas-lift valve as used on an East Texas lease.

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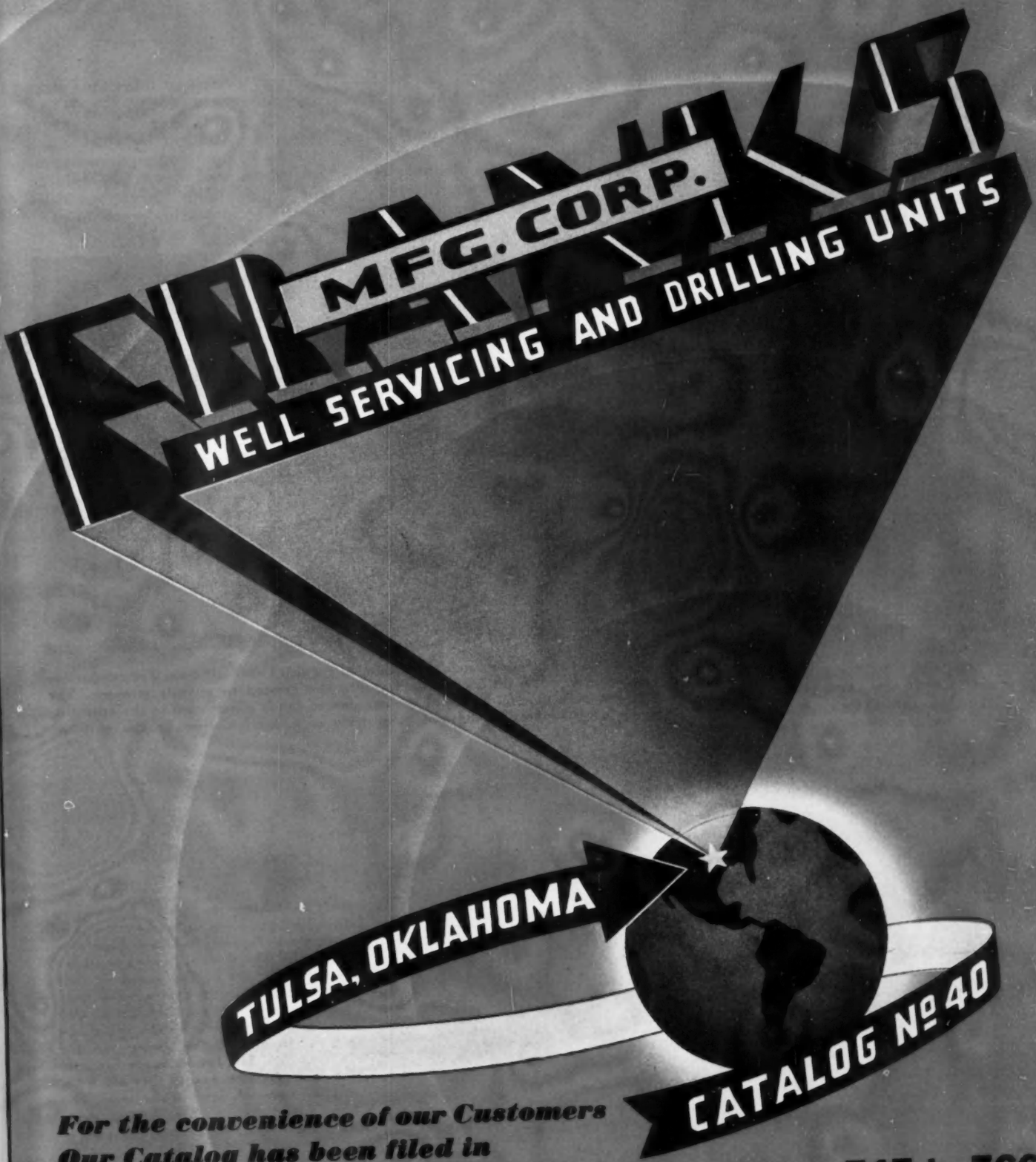

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The 1940 COMPOSITE CATALOG . . . Pages 747 to 766

Pumping Equipment Guards Help Reduce Damage Claims

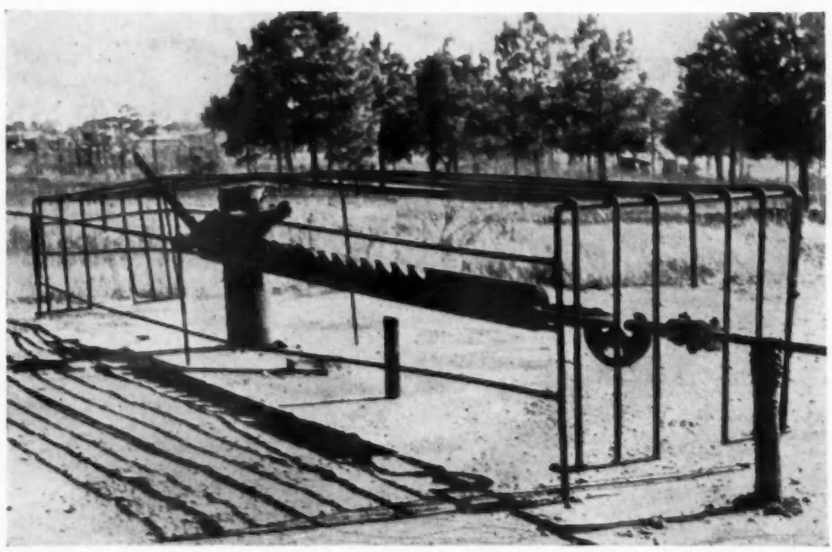
PROTECTION of pumping equipment against trespassing stock becomes a problem for the producer whose lease is used as pasture, with frequent claims being filed for death of animals due to becoming entangled in moving parts, or "poisoned" by eating oil-soaked earth.

Flowing wells, according to official records, have even been turned on by cows rubbing against elevated valves. These may be protected by running two or more heavy wires around the four legs of the derrick, making a stock-tight enclosure for the well head. where access is provided for the switcher, this usually takes the form of a turnstile, with posts too closely set to admit stock.

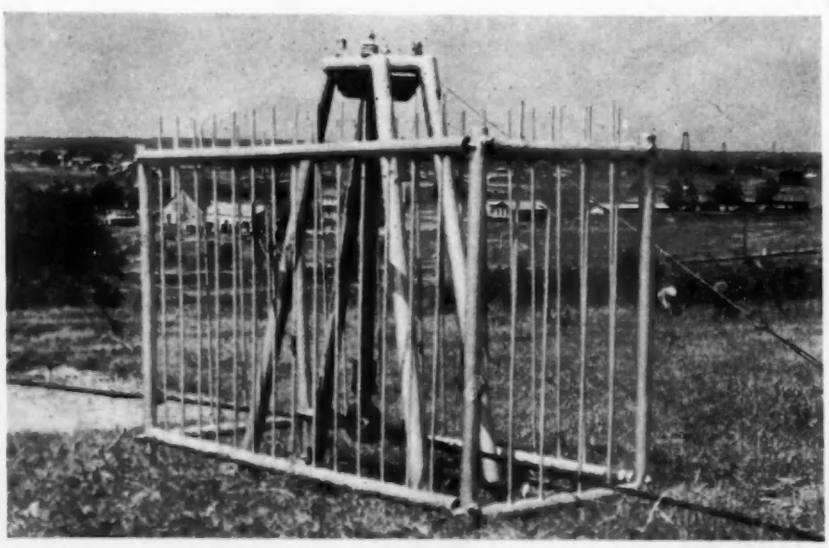
Where pumping equipment is used, the forms of protection employed must be more elaborate, as stock will forsake the shade of a tree to lie down under a pumping rig—if claims and damage suits may be credited as proof—there to be mangled, killed, or otherwise lessened in value when the equipment is put to work.

Fencing of wells and powers is general where stock has access to the well site, and some producers go to the extent of adding safe-guards for everything in the field except the reciprocating rod line itself. Knock-offs and other connecting devices may be located within the well-head enclosure itself; or, where at a distance from the power unit, are protected by fence or guard. Where the guard is used, it may be fabricated from discarded sucker rods.

Such guards also help in keeping down accident by shielding a portion of pumping equipment frequently seized upon by children for "hitch-hiking" precarious rides on the reciprocating mechanism.



Welded half-inch sucker rods form a guard for this knock-off unit. The supporting legs are carried a sufficient distance into the ground to provide strength. The shield extends the full length of the equipment, but is constructed so the operating lever extends above the guard to provide easy manipulation by the switcher.



This hold-down post guard is made in four sections. Each end piece is made as a frame by welding two-inch pipe as a rectangle. The vertical posts extend beyond the height of the guard so they may be buried in the ground. The horizontal 2-inch pipe members are drilled for 4 pieces of sucker rods, which are welded in place after being inserted in the holes. The two sides are made in the same manner, except they are without the two-inch pipe at the ends. The sides are bolted to the vertical posts of the ends. Being portable, these guards may be moved if it is necessary.

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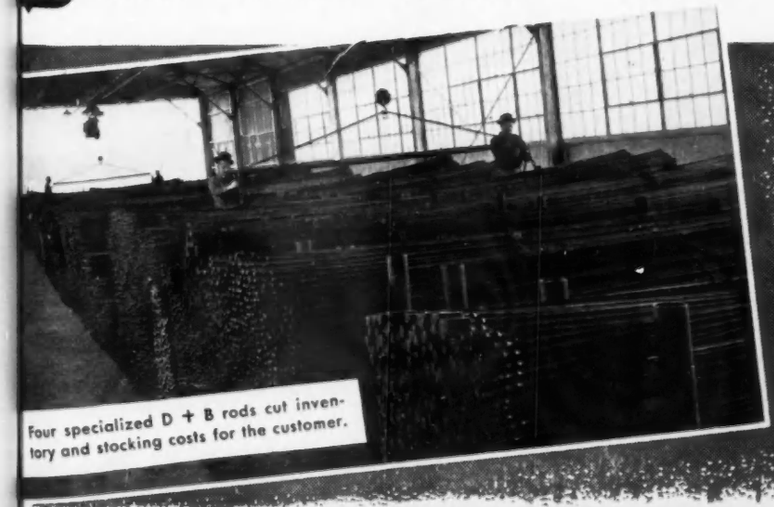

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SERVING THE OIL AND GAS INDUSTRIES

Supreme Court Upholds Madison Anti-Trust Convictions

Decision Paves Way for More Such Prosecutions Among Which East Coast Marketers May Be First

PAVING the way for more suits planned by the Department of Justice against the oil industry, notably the long-pending East Coast case, the Supreme Court on May 6, by a 5-to-2 opinion, reversed the Seventh Circuit Court of Appeals and affirmed in its entirety a decision of the Federal District Court at Madison, Wisconsin, holding 12 corporations and 5 individuals guilty of violation of the Sherman Act.

Involved in the decision were Socony-Vacuum Oil Company, Inc., Wadhams Oil Company, Empire Oil & Refining Company, Continental Oil Company, The Pure Oil Company, Shell Petroleum Corporation, Sinclair Refining Company, Mid-Continent Petroleum Corporation, Phillips Petroleum Company, Skelly Oil Company, The Globe Oil & Refining Company (Oklahoma), The Globe Oil & Refining Company (Illinois), C. E. Arnott, vice president of Socony-Vacuum Oil Company, Inc.; H. T. Ashton, manager of the Lubrite Division of Socony-Vacuum Oil Company, Inc.; R. H. McElroy, Jr., tank-car sales manager of The Pure Oil Company; P. E. Lakin, general manager of sales of Shell Petroleum Corporation; and R. W. McDowell, vice president in charge of sales of Mid-Continent Petroleum Corporation.

The 67-page majority opinion was delivered by Justice Douglas. Justice Roberts filed a dissenting opinion in which Justice McReynolds concurred, and Chief Justice Hughes and Justice Murphy, who was attorney general during part of the time the suit was pending, took no part in the case.

It was the second time the Supreme Court had acted upon the suit, it having in effect affirmed the decision of the Court of Appeals on November 22, last, when it handed down a 4-to-4 decision without written opinion. To secure a clear-cut decision, the government asked for a review, to be made when the vacancy on the bench existing at the time of the decision because of the death of Justice Pierce Butler was filled.

In effect, the majority opinion held that a business combination that has the purpose and the power of fixing prices is in violation of the Sherman Act even though the controls it exercises are designed to improve conditions within an industry.

"Under the Sherman Act," the court declared, "any combination formed for the purpose and with the effect of raising, depressing, fixing, pegging or stabilizing the price of a commodity in interstate or foreign commerce is illegal per se."

Started in 1936

The so-called Madison case was initiated in December, 1936, with the return of an indictment in the district court charging 27 corporations and 56 individuals with violations of the Sherman Law. During the proceedings the number of defendants was whittled down to the 12 corporations and 5 individuals whose appeal came before the Supreme Court.

Outlining the background of the alleged conspiracy from 1926, when overproduction assumed serious proportions, through the NRA period and the pooling and marketing program adopted by the companies to deal with distress gasoline, Justice Douglas, reading the majority opinion, declared that "the conclusion is irresistible that defendants' purpose was not merely to raise the spot-market prices but, as the real and ultimate end, to raise the price of gasoline in their sales to jobbers and consumers in the Mid-Western area.

"Their agreement or plan embraced not only buying on the spot markets but also, at least by clear implication, an understanding to maintain such improvements in Mid-Western prices as would result from those purchases of distress gasoline," he said. "The latter obviously would be achieved by selling at the increased prices, not by price cutting. Any other understanding would have been wholly inconsistent with and contrary to the philosophy of the broad stabilization efforts which were under way. In essence the raising and maintenance of the spot market prices were but the means adopted for raising and maintaining prices to jobbers and consumers."

There was no question, he added, but what these activities did serve to increase both spot and retail prices in the area.

Justice Douglas devoted considerable attention to the charge of the district court judge to the jury, which the court of appeals later held to be reversible error as based upon the theory that such a combination as was attributed to the defendants was illegal per se.

Disapproving of the appellate court's action, he pointed out that "for over 40 years this court has consistently and without deviation adhered to the principle that price-fixing agreements are unlawful per se under the Sherman Act and that no showing of so-called competitive abuses or evils which those agreements were designed to eliminate or alleviate may be interposed as a defense."

Contributed to Price Rise

"There was abundant evidence that the combination had the purpose to raise prices," he said. "And likewise, there was ample evidence that the buying programs at least contributed to the price rise and the stability of the spot markets, and to increases in the price of gasoline sold in the Mid-Western area during the indictment period. That other factors also may have contributed to that rise and stability of the markets is immaterial. For in any such market movement, forces other than the purchasing power of the buyers normally would contribute to the price rise and the market stability. So far as cause and effect are concerned it is sufficient in this type of case if the buying programs of the combination resulted in a price rise and market stability which but for them would not have happened. For this reason the charge to the jury that the buying programs must have 'caused' the price rise and its continuance was more favorable to respondents than they could have required. Proof that there was a conspiracy, that its purpose was to raise prices, and that it caused or contributed to a price rise is proof of the actual consummation or execution of a conspiracy under Section 1 of the Sherman Act."

Further, the opinion continued, the fact that sales on the spot market were still governed by some competition is of no consequence, "for it is indisputable that competition was restricted through the removal by respondents of a part of the supply which but for the buying programs would have been a factor in determining the going prices on those markets." Jobbers and consumers in the area paid more for their gasoline than they would have but for the conspiracy, it was declared; competition was not eliminated from the markets, but it was clearly curtailed.

"The elimination of so-called competitive evils is no legal justification for such buying programs," Justice Douglas declared. "The elimination of such conditions was sought primarily for its effect on the price structures. Fairer competitive prices, it is claimed, resulted when distress gasoline was removed from the market. But such de-

fense is typical of the protestations usually made in price-fixing cases. Ruinous competition, financial disaster, evils of price cutting and the like appear throughout our history as ostensible justifications for price-fixing. If the so-called competitive abuses were to be appraised here, the reasonableness of prices would necessarily become an issue in every price-fixing case. In that event the Sherman Act would soon be emasculated; its philosophy would be supplanted by one which is wholly alien to a system of free competition; it would not be the charter of freedom which its framers intended.

Price Control Dominates Market

"The reasonableness of prices has no constancy due to the dynamic quality of the business facts underlying price structures. Those who fixed reasonable prices today would perpetuate unreasonable prices tomorrow, since those prices would not be subject to continuous administrative supervision and readjustment in light of changed conditions. Those who controlled the prices would control or effectively dominate the market. And those who were in that strategic position would have it in their power to destroy or drastically impair the competitive system. * * * The Act places all such schemes beyond the pale and protects that vital part of our economy against any degree of interference.

"Congress has not left with us the determination of whether or not particular price-fixing schemes are wise or unwise, healthy or destructive. It has not permitted the age-old cry of ruinous competitive and competitive evils to be a defense to price-fixing conspiracies. It has no more allowed genuine or fancied competitive abuses as a legal justification for such schemes than it has the good intentions of the members of the combination. If such as shift is to be made, it must be done by the Congress."

That the officials of the federal government had knowledge of the actions of the oil companies was of little consequence, the court intimated. "The fact that Congress through utilization of the precise methods here employed could seek to reach the same objectives sought by respondents does not mean that respondents or any other group may do so without specific Congressional authority," Justice Douglas declared. "Admittedly no approval of the buying programs was obtained under the National Industrial Recovery Act prior to its termination on June 16, 1935, which would give immunity to respondents from prosecution under the Sherman Act. Though employes of the government may have known of those programs and winked at them or tacitly approved them, no immunity would have thereby been obtained. For Congress had specified the precise manner and method of securing immunity. None other would suffice."

The exclusion by the lower court of the various offers of the respondents of proof covering the background and operation of the NRA and petroleum code was not reversible error, he continued.

The final major point of controversy were certain statements made to the jury by government counsel which the respondents contended appealed to class prejudice and requested a conviction regardless of the evidence as "the wish and desire of the highest officials in the government of the United States."

Failed to Object

On this point, Justice Douglas held that the defense had failed to take advantage of its privilege to object and take exceptions as such statements were made and that it could not remain silent and then, after a verdict has been returned, seize for the first time on the point that the comments to the jury were improper and prejudicial.

While the statements complained of, standing by themselves, "appear to be highly improper," he said, they were not prejudicial in view of the surrounding circumstances and, in any event, "in view of the justification which respondents sought to establish for their acts, the subject matter of these statements was certainly relevant. The fact that government counsel transgressed in his rebuttal certainly cannot be said to constitute prejudicial error."

The action of the court in granting new trials to some defendants and denying them to the respondents was held to be proper and not subject to contest since such action is a matter within the discretion of the trial court.

It was also held that there was no error in the denial by the district court of a directed verdict dismissing the indictment against R. H. McElroy, Jr., tank-car sales manager of The Pure Oil Company, and that the contention of the respondents that the Madison court was without jurisdiction was untenable because some of the acts charged against them did occur in the Western District of Wisconsin.

Justice Roberts Dissents

Challenging the findings of the majority on all important points, Justice Roberts held that the indictment failed to allege and the evidence failed to disclose the commission of any overt acts in the district of trial, and that the case should have been dismissed for that reason.

He also held that in granting Standard Oil Company (Indiana) a new trial and refusing new trials to the other defendants the court entered a verdict against those others without a jury finding to support it and that, accordingly, to affirm the judgment of conviction is to deny the respondents the right to jury trial guaranteed by the Constitution.

Justice Roberts also attacked the majority opinion with respect to the trial court judge's instructions to the jury, and asserted that "no case decided by this court has held a combination illegal solely because its purpose or effect was to raise prices. The criterion of legality has always been the purpose or effect of the combination unduly to restrain commerce."

The effect of the charge to the jury, he said, was to tell it "that if they found the combination had power and purpose to raise the general level of prices, they should convict without considering whether the defendants' concert of action was intended merely to remove a source of destructive competition, and without considering whether, as defendants contended and sought to prove, other factors in the industry, over which they had no control, limited their power to raise prices beyond a level which would be the normal result of the removal of the abuses engendered by the dumping of distress gasoline."

Differing sharply from the majority, the dissent held that the closing address of government counsel was adequate ground for setting the verdict aside.

"One of the most reprehensible things a prosecutor can do is to attempt to put into evidence before the jury his own, and his colleagues', opinion as to the guilt of the defendants he is prosecuting," Justice Roberts declared. "Such a practice brings before the jury the unsworn testimony of a sworn officer of the government. This fact lends it undue and improper weight and injects an element into the case which is so insidious and so impossible to counteract that trial judges, in my experience, have never hesitated to withdraw a juror and declare a mistrial because of this violation of the canons. * * *

"Considering what is set out in the opinion of this court, and the additional references I have made to the address, I am of opinion that counsel's argument was highly improper, as indeed the government admits, and, further, that it was highly prejudicial. I do not think the court took proper means to counteract the impropriety and prejudice thus created and I think the only remedy available is to set aside a verdict ensuing upon such misconduct."

Means More Suits

Officials of the Department of Justice declared the Supreme Court decision to be of outstanding importance, and indicated the belief that it successfully cleared the way for further anti-trust suits, not only against the oil industry but others.

In a formal statement, Assistant Attorney General Thurman Arnold, in charge of anti-trust law enforcement, said "the Madison oil case is of far-reaching importance because it decides finally and decisively that industries may not join together to put a floor under prices on the plausible excuse that any competition which hurts is a competitive evil.

"The effect of such a standard," he said, "was to destroy the meaning of competition and permit any large combinations to drive out of the market competitors who cut prices enough to give the consumer real relief.

"Specifically, the oil companies claim that it was reasonable for them to combine to prevent consumers from buying low-priced gasoline on the ground that it was distress gasoline. By distress gasoline they meant any gasoline which might be sold at lower prices than the oil companies thought was justified. This kind of justification for raising prices to eliminate the competitive evil of real competition has been given to the department in literally hundreds of similar cases.

"The decision of the Circuit Court of Appeals stood in the way of prosecuting such cases and left the door wide open for the kind of combination which does not fix the prices directly but prevents them from failing to meet supply and demand. That decision is now reversed and the law is clear that supply and demand must govern the market unless the legislature acts in specific cases. The decision will be of tremendous aid to consumers all over the United States."

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HIGHLIGHTS IN THE WEEK'S NEWS

Courts

High Court Continues Stay In Humble East Texas Case

The Supreme Court on May 6 ordered a stay of enforcement of the injunction against the Texas Railroad Commission's proration order of June, 1939, granted Humble Oil & Refining Company by the West Texas Federal District Court, until it can pass on the question of jurisdiction.

The court's decision as to whether it has jurisdiction in the case is expected to be rendered before it recesses for the summer on June 3, but if the commission's petition for review of the case is granted it will not be heard until next October or November.

The petition for review of the lower court decision was filed by the commission April 19 and three days later it asked that the injunction be stayed until the court could act.

The suit was initiated by Humble Oil & Refining Company on the ground that the proration order discriminated against it, it being contended that it was the owner of not less than 14 percent of the oil in the East Texas field and should be allowed 14 percent of the total production there permitted, whereas in fact the proration order attacked gave it but 9.932 percent. The district court held the order to be unreasonable, discriminatory and confiscatory and issued an injunction.

On appeal of the commission, which told the court of its intention to carry the case to Washington, the district court on March 19 granted a stay of 60 days in which it was anticipated the Supreme Court could hear and determine the issue. Since the court will not be able to act in that time, it was asked to order the lower court to hold up enforcement of the injunction further.

Kansas High Court Upholds Hugoton Gas Field Proration

The Oklahoma Supreme Court held May 4 that a stay order granted by the Stevens County district court against operation of a system proposed by the Kansas Corporation Commission to prorate the Hugoton gas field was "prematurely and improvidently" issued. The order was issued March 16 upon application of 182 land and royalty owners who contended the commission's action would damage them.

However, the high court did not rule on the constitutionality of proration procedure itself, but its decision authorized the state agency to proceed with fixnig allowables for the field. Originally the proration order was to take effect April 1. The commission has taken evidence on market demand in the field but has not set up a schedule of allowables.

In appealing to the supreme court, commission attorneys had argued that the state order was a restraint on functions designated to the state body by the legislature.

The Hugoton gas area extends southward into Oklahoma. It was brought out in previous litigation that unless some companies were granted relief on the Kansas side they would be forced to move operations into Oklahoma.

Oklahoma permits production up to 25 per cent of a well's potential capacity.

The Supreme Court decision affirming convictions in the government's anti-trust suit at Madison, Wisconsin, is reviewed in special article on page 40.

Protest Inclusion of Filling Stations in Chain Bill

Opposition to including filling stations in the Patman anti-chain store bill was expressed before a House ways and means subcommittee May 10 by members of Congress from four oil-producing states and representatives of independent station chains.

The witnesses agreed that inclusion of filling stations in the bill, if enacted, would wreck the filling station industry and asserted that there is no public demand for their classification as objectionable chains.

The service station operators testified that they consider themselves engaged in a service rather than a retail sales occupation, and pointed out that stations and the products they sell already are heavily taxed.

The elimination of the station chains, it was declared, would not be of any value to the public but, on the contrary, might result in increased prices if the economies of efficient operation are sacrificed.

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Control

Political Moves May Give Texas All-New Commission

The Texas political situation is such that there is a possibility the state's oil proration agency, the Texas Railroad Commission, may be composed of entirely new members on the first of the year. In addition, there is talk of creating a separate commission to handle oil and gas affairs, and this may become a factor in the governor's race.

Either of these developments might have a material bearing on the state's attitude toward curtailment, and since Texas produces nearly 40 percent of the current daily output of the United States it likewise would have an important bearing nationally. In the past, with the exception of only a few temporary periods, the commission has issued orders holding Texas output near the minimum quantity. New members or a new agency might be inclined toward more liberal allowables. It is certain that the commission will have at lease one new member, and he can largely control the commission since the two incumbents who may remain have somewhat opposing views. Whatever side the new member favors will be in the majority.

The possibility of an entirely new commission personnel hinges around the announcement that Lon A. Smith will not be a candidate for re-election, that Jerry Sadler is campaigning for governor, and E. O. Thompson is considering running for one of several offices, and may even resign.

While the prospect of a resignation is exceedingly remote, still it exists and must be considered. Commissioner Thompson's term does not expire for two years. Should he resign before the term expires, the governor would appoint his successor. That successor, in turn, would have to run for the remainder of the unexpired term. Commissioner Sadler's term has four years to run, and in the event of his resignation, any successor appointed would be faced with the same problem.

This situation would exist if either of the commissioners resigned prior to the general elections in November. If the resignation took place after that time, the appointee could serve until the expiration of the term in the case of Thompson, or until the next general election in the case of Sadler. In the latter instance, the appointee would have to run two years from now for the unexpired portion of the four years of Sadler's term which remain.

Prospect of New Body

There has been some discussion in Austin of the prospect of a new oil and gas commission, but the advocates of such a program do not appear to be particularly enthusiastic about it. This lack of enthusiasm arises apparently from the belief that so long as the commission exists as a political body, it is

unlikely to offer better service than the railroad commission does now, even though it would be appointive. There is no reason to believe that future governors would abandon their desire for political support long enough to appoint commissioners on merit alone; and, if the appointments remained political plums, political hacks would be selected to fill them.

Because of the political activity of the commissioners during the past three years, some advocates of an appointive commission discussed the matter again; but, even with an appointive commission, there would be nothing to prevent one of the commissioners' use of his appointment as a stepping stone to a higher political office.

Announcement that Lon A. Smith, chairman of the commission, would not be a candidate for re-election threw the race wide open.

P. Pierce Brooks was among the first to announce. Four years ago he ran for attorney general. At the last election he ran for lieutenant governor and polled 400,000 votes. Brooks is a lawyer who lives in Dallas.

Howell E. Cobb, county judge from Brady, has announced he is a candidate.

J. D. Copeland, Jr., of Austin, is a former employe of the commission. He was stationed in East Texas during hot oil days and aided in devising the "tender" system by which every barrel of oil produced in Texas is accounted for. After completing his East Texas work, Copeland was for several years examiner for the commission in the "Rule 37" Room, where applicants for special permits to drill present their cases.

Olin Culberson of Austin is likewise a former employe of the commission. Culberson ran against Thompson in the latter's first race. He was subsequently employed on the commission and served for several years as chief of the gas utilities division. He supervised the work of the commission's auditors, accountants and engineers who valued gas utilities for rate-making purposes, and had a large share in conducting the hearings upon which these rate orders were based subsequently. Culberson also was used by the commission for a pinch-hitter, having conducted various investigations into hot-oil running and other irregularities that arose during the time he was in office.

Ross Hardin of Prairie Hill is a member of the legislature, and has been a strong pension advocate there. He came into prominence last year when he and his brother, who is a state senator, conducted a radio campaign to aid in the drive for larger pensions.

Roy Hofheinz of Houston, county judge of Harris County, has been over the state several times attempting to get an organization together. Earlier in the season he was considered a certain candidate, but he has been less active around Austin recently.

East Texas Oil Man

John Paul Jones, an oil man from New London, Texas, has distributed a good deal of campaign literature around Austin and may be considered a candidate.

W. H. McDonald, former state land commissioner who was defeated for re-election last year is in the race, McDonald, an attorney, came from Eastland, originally.

Larry Mills of Dallas has been in politics before, at one time ran for land commissioner.

Roy Motley, former Trinity University football star from Waxahachie, has entered the race. He is urging his election on the basis of more young people in public office.

Eugene T. Smith, an insurance man in Austin who was very active in the Ferguson administration, is another to announce his candidacy.

Carl Nesbit of Mineola, former adjutant general under Governor James V. Allred, is also in the race. Nesbit has been prominent in American Legion activities and probably will have the support of that group.

Baker Saulsbury of Pampa is an oil man who has run one race for governor and made some showing. It is possible that the Panhandle will support Saulsbury in an effort to have representation on the commission in the event Thompson is elected congressman or governor.

Olan Van Zandt of Tioga, the blind state senator and former member of the house of representatives, has paid his $100 filing fee. Van Zandt has been active in both houses of the legislature in regard to public utilities legislation, and it is possible that he will have the support of the larger gas utility companies.

Charles M. Langford, former chief petroleum engineer for the commission, was in Austin last week for the avowed purpose of running for commissioner. Langford is now employed as petroleum engineer for the League City Operators' Association.

Walton D. Hood has resigned as chief enforcement officer for the motor bus division of the commission to run for the office of commissioner. Hood has been in the enforcement bureau for several years, and is a former president of the Texas Bankers' Association.

Oppose Natural Gas Regulation for Producers

Opposition to any extension of the authority of the Federal Power Commission over sale of natural gas by producers or by operators of gathering systems who are not otherwise engaged in the natural gas industry was voiced last week by the Independent Petroleum Association of America in a brief filed with the commission in connection with a case now pending before it.

In the brief, submitted by Russell B. Brown, general counsel, the association pointed out that practically every one of the approximately 380,000 oil wells in the country, at some time in its life, produces gas as an incident to the production of oil, disposition of which is controlled by state law, as is the production of the approximately 54,000 wells producing gas, but no oil.

The state authorities also regulate the distribution of natural gas by retailers for final consumption, he explained, but between the production and the retail distribution is a "middle field" which has not been subject to any regulation and which was dealt with by Congress in the Natural Gas Act.

Opposing the commission's contention that, while gas may be produced without regulation, after it is produced it cannot be sold except under authority of the commission if it should enter into interstate commerce, Brown declared that there has never been any indication, in its consideration of the question, that Congress intended the federal regulation of the natural gas industry to apply to original sales by producers or operators of gathering lines.

"Congress," he contended, "considered that a producer is not a natural gas company, is not subject to the regulation by the Federal Power Commission, and the sale of his gas to a natural gas company is outside the jurisdiction of the commission. The regulations affecting natural gas begin when the natural gas company has possession of the gas."

American Scientific Congress To Hear Petroleum Discussion

Representatives of the various American Republics gathered in Washington May 10 for the Eighth American Scientific Congress, during the course of which attention will be directed to economic and social problems in which the nations of the Western Hemisphere are mutually concerned.

A discussion of trade and financial problems on May 17 will include addresses on Exchange Between the United States and Mexico, by Dr. Vernon G. Sorrell, professor of economics and business administration at the University of New Mexico; on Co-operative Formulas for the Solution of Economic Problems, by Dr. Felipe Pazos Y. Roque of Havana, Cuba. And Petroleum in the Development of Venezuela, by Dr. Jose A. Vandellos, representing the Venezuelan government.

President Delays Study of California Off-Shore Report

No consideration has yet been given the report of Attorney General Jackson dealing with legal phases of proposals for assertion of federal title to the California off-shore oil fields, it was disclosed May 10 by President Roosevelt.

Roosevelt said the report had been awaiting attention for some time, but that the stress of other matters had made it impossible for him to study it. Indications were that it had been laid aside until more pressing international and domestic questions have been dealt with.

Natural Gasoline Production Up to 6,082,000 Gallons Daily

Natural gasoline production, following the trend of crude oil, advanced in March to a daily average of 6,082,000 gallons from 6,052,000 gallons in February, according to the monthly report of the United States Bureau of Mines.

Output for the month totaled 188,538,000 gallons against 175,518,000 gallons in February, bringing the total for the first quarter to 543,438,000 gallons compared with 54,438,000 gallons in the corresponding period last year.

The chief gains in output during the month, it was stated, were in the Texas Gulf, East Texas and Arkansas districts.

Stocks of natural gasoline increased nearly 27,000,000 barrels during the month, stocks at plants and terminals advancing from 113,190,000 to 131,460,000 gallons, and at refineries from 86,604,000 to 95,046,000 gallons, the report showed. The total of stocks was 28,224,000 gallons more than was on hand at the close of March, 1939.

Oil and the War

THE long anticipated quickening of war activity has come with a vengeance —come in a somewhat different manner than was expected but apparently come on a scale which will make World War No. 1 seem puny. And with it is coming a demand for petroleum through tanker movements which will exceed anything World War No. 1 ever felt.

With the Mediterranean at least temporarily closed this demand should affect South American and American oil immediately.

Standing in the way of the delivery of petroleum products to the Allies is the tanker situation. The situation is bad — although it should not be. Inefficiency in the handling of convoys — delays of a magnitude which can be blamed only on gross inefficiency on the part of the Allied authorities responsible for the movement of oil — stand in the way of prompt delivery from the west and the Allies may face an oil shortage unless steps are taken to cure this inefficiency.

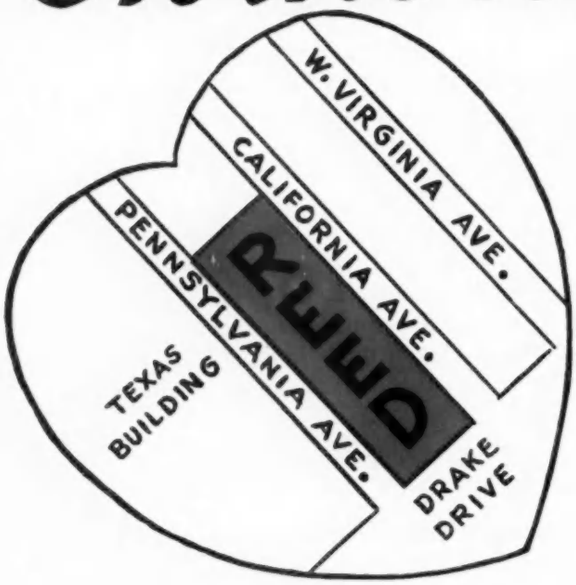
With mine, plane and submarine activities responsible for a loss in tonnage in the way of tankers which, although not by any means ruinous, has been considerable, tanker movements are, or were a few days ago, being handled with such delay that the effectiveness of available bottoms was being drastically reduced. Of course the necessity for the movement of tankers in convoys is responsible for a part of this loss in effectiveness, although heavy reductions under governmental orders in the non-military consumption of petroleum products in Britain have made the loss of effectiveness less felt, but now that the war has taken on new aspects the demand should rise immediately. With this rising in demand present inefficiency in handling tanker movements will be more keenly felt.

Most of the production of oil in the world is in the hands of those who are friendly to the Allies. The oil is available for immediate shipment. It seems a shame that poor handling on the part of those who need it should stand in the way of a constant flow of this necessary product.

THE OIL WEEKLY of April 22 presented a picture of Germany's sources of supply of petroleum products or their substitutes. The supply of the natural product in Germany is limited. With Roumania closed, as it well may be within a short time, not only the small amount of Roumanian crude which Germany has been receiving would stop but any further movements of Russian oil would be closed out. This would leave Germany dependent upon synthetic materials of which her supply is increasing — plus oil seized in the countries she has raped.

An immediate effect of the war will likely be the transfer to New York of the executive department of Royal Dutch Shell. Plans for this move were made months ago. Apparently the company realized even more than some of the then neutral nations of Europe that the war would not be confined to both sides sitting behind their respective walls.

In the heart of the Oil Show



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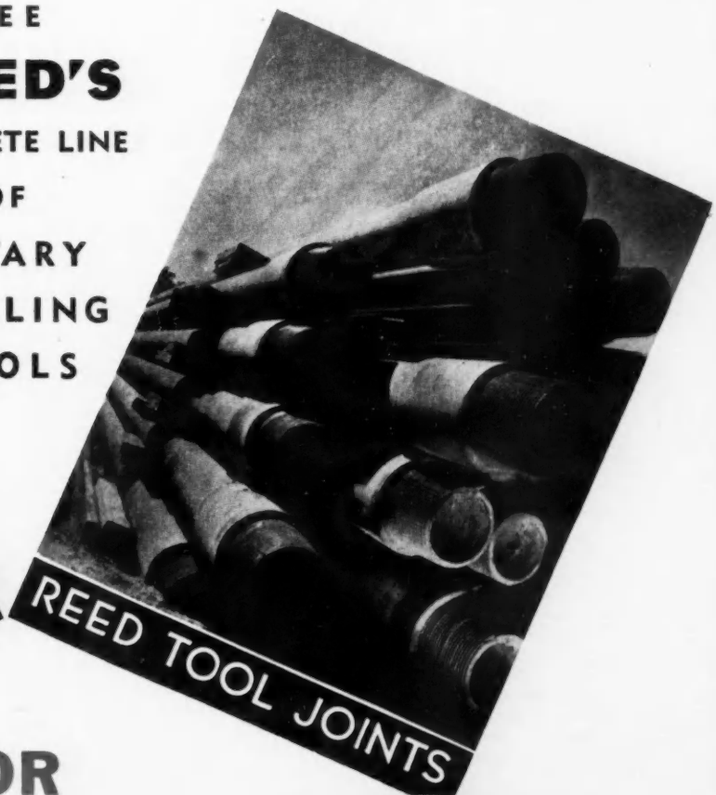

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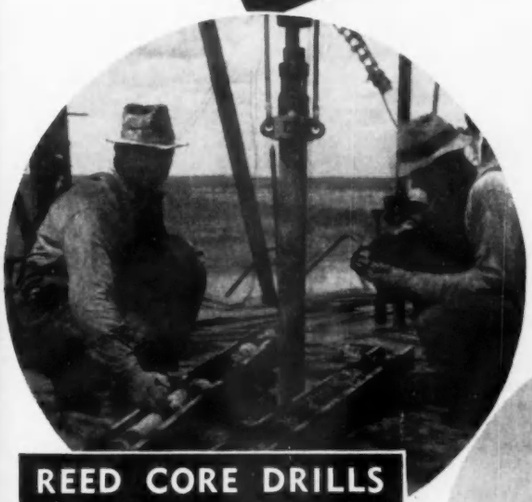

REED CORE DRILLS
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REED
DRILL COLLARS
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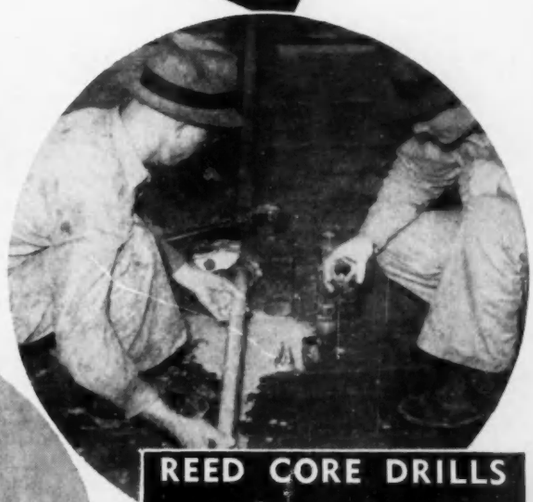
SUBSTITUTES

REED VALVES



REED CORE DRILLS
Wire Line

REED
W-I-B (Welded-In-Blade)
DRILLING BITS
•
REED
REAMERS

REED ROLLER BIT CO.

Papers Give Broad View of What Is Going on in Gas Industry

PAPERS dealing with production, transmission, and distribution of natural gas were included among the many presented May 6 to May 10 at Houston at the 35th annual convention of the natural gas section of the American Gas Association.

Those papers provided a broad and searching view of what is going on in the natural gas industry of the United States, which was exceptionally well represented at the sessions that extended from Monday through Thursday.

The attendance at the Houston convention set a new record for the organization, 1335 persons having registered in the first three days of the meetings.

The production and pipe-line studies were offered along with similar treatments of subjects in the selling, accounting, and safety departments of the industry. The papers on distributing gas constituted part of the program of the 17th annual distribution conference, held in conjunction with the 35th annual natural gas convention.

In addition, there were general sessions on Tuesday and Wednesday mornings, held jointly by the natural gas and distribution divisions. In the first of those general sessions, Oscar F. Holcomb, mayor of Houston, welcomed the groups; Elmer F. Schmidt, chairman of the natural gas section, delivered the chairman's address; and Walter C. Beckjord, of New York, president of the American Gas Association and executive vice president of Columbia Gas & Electric Corporation, spoke on "The Natural Gas Industry—100 Years of Progress."

Following these addresses were three other talks at the general session on Tuesday morning. Charles R. Bellamy, of New York, chief engineer of the gas department of Columbia Gas & Electric Corporation, discussed the company program for the sale of air conditioning. John A. Warden, general sales manager of Oklahoma Natural Gas Company, Tulsa, spoke on institutional advertising and publicity. Wm. A. Dougherty, of New York, counsel for Standard Oil Company (New Jersey), discussed the federal power commission procedure under the natural gas act.

The second general session, Wednesday morning, was presided over by H. D. Hancock, of New York, vice chairman of the natural gas section, and president of Gas Advisers, Inc. First on the program was a discussion of the association's progress by Alexander Forward, of New York, managing director of the American Gas Association. He was followed by Howell C. Cooper, Hope Natural Gas Company, Pittsburgh, who discussed the contribution to the natural gas industry by the studies of the main technical and research committee, and by Herbert W. Graham, of Pittsburgh, director of metallurgy and research of Jones & Laughlin Steel Corporation, who spoke on the contribution to the natural gas industry by research in the steel industry. Frank C. Smith, of Houston, president of Houston Natural Gas Company, discussed relationships of fundamental and applied research problems confronting the natural gas industry. Henry O. Loebell, of New York, vice president of Combustion Utilities Corporation, spoke on improvements in industrial processes through advancement in heat application.

Herewith are abstracts of some of the papers presented at the production, transmission, and distribution sessions of the convention.

Our Experiences with the Underground Storage of Gas

By C. U. Daniels
Oklahoma Natural Gas Company, Tulsa, Oklahoma

Company decided to store gas in depleted sands near the Tulsa consuming area, when important reserves there were depleted. Advantages foreseen were improvement of the transmission system load factor, margin of safety for peak demands, reduction of gas waste, and possibility of obtaining dump prices on distress gas in periods of low demand.

A 300-acre structure 25 miles from Tulsa was selected, with consideration of these advantages: proximity to the Tulsa market, shallow depth, high porosity of sand, small acreage, absence of rapid edgewater encroachment, sufficient sand thickness, and isolation from other producing areas. The depleted gas sand in the selected area was at 1750 feet, was 45 feet thick, and had 20 percent porosity, and 4 wells had been produced until dead.

For the gas storage, a small compressor plant was built to inject gas through one of the wells. Storage of gas was begun in 1937, and subsequently, two cycles of injection and withdrawal have been completed. Injection for the third cycle will be made in the summer of 1940.

This experiment has been of benefit, as all anticipated advantages were derived to some extent. Several similar projects are under consideration and will be put into operation when acquired.

* * *

By F. H. Finn
Geologist,
The Peoples Natural Gas Company, Pittsburgh, Pennsylvania

Systematic storage of natural gas was started by the company May 1, 1937, in a nearly depleted pool in Salem, Penn, and Hempfield Townships, Westmoreland County. Storage was started to conserve some of the large quantities of gas from the northern Oriskany gas fields, which were highly competitive. On August 7, 1939, a small area near Murrysville was selected for underground storage, as it was strategically located near large centers of distribution and the gas could be quickly recovered on days of peak demand.

In the Salem, Penn and Hempfield Townships area, gas was stored principally in the Murrysville sand at 1400 feet, covering about 2780 acres, although the whole field embraces 5500 acres. The Murrysville sand has porosity ranging up to 25 percent. The pool is on a dome on the Grapeville anticline. Wells were checked for leaks and need of repairs. Company had two pump stations able to handle the gas for storage. Twenty-seven wells were used for intake. Gas was injected over a 26-month period. Because of low rock pressure, gas was pumped back out as well as in. Geological examination showed that storage was within an area controlled by the company. A disadvantage was the large size of the pool, as rock pressure was difficult to build up. Experiment was successful, as it conserved gas that otherwise would not have been available when needed.

In the small area near Murrysville, it was demonstrated that a small storage reservoir was advantageous, requiring small storage space to build up pressures which would accomplish a large capacity of daily delivery from the wells. The pool embraces 630 acres, and sand of 25 percent porosity is at 1870 feet, the pay being 10 feet thick, although the sand is 120 feet thick. Three wells were cleaned out and used for storage. It was not necessary to pump the gas out of the pool, following injection by stepping up by 8 to 47 pounds the pressure of 250 pounds maintained in the company's pipe line running through the area.

* * *

By J. H. Isherwood
Executive Vice President and General Manager,
North Penn Gas Company, Port Allegany, Pennsylvania

Company stored gas in the Farmington field, discovery Oriskany field in Pennsylvania, located on the company's pipe line. The horizon in which gas was stored had good permeability. Original rock pressure had been reduced from 1650 to 50 pounds. Very little difficulty was encountered in use of the area as a storage reservoir.

The area was particularly advantageous for the purpose. It was a well defined dome, sealed on all sides by faults or salt water contact.

* * *

By P. D. Mellon
General Superintendent and Chief Engineer,
Canadian Western Natural Gas, Light, Heat and Power Co., Ltd., Calgary, Alberta

The Bow Island gas field, in the southeastern part of Alberta in Townships 10 and 11, Ranges 11 and 12, west of the 4th Meridian, originally covered 30 square miles and contained 44 billion cubic feet of gas.

Although 27 wells were originally drilled, all were not suitable for repressuring purposes, and it was decided to examine each well thoroughly, using a portable machine. All but 11 wells were abandoned by cementing off all strings, while those to be used for repressuring were either tubed or repaired to eliminate the possibility of any migration of gas or water from one sand to another.

In order to recharge the field by forcing gas down the wells, overcome rock pres-

sure, and retard encroaching water, which was estimated at a pressure of 750 pounds per square inch, it was necessary to install compressors capable of handling high gas pressure.

From the commencement of operation August 3, 1930, to February 1, 1939, a total of 11,925,588 M.C.F. has been stored.

The average rock pressure of the field at commencement of operations was 249 pounds, and on February 1, 1939, it was 565 pounds—an increase of 316 pounds.

The company feels that the expenditure incurred has been justified and that a high pressure gas field connected to its transmission system is being built up and will be available for use during peak load demands and emergencies or as a reserve supply for future use.

* * *

By E. O. Schillhann
Geologist,
The Manufacturers Light & Heat Co.,
Pittsburgh, Pennsylvania

In 1937 The Manufacturers Light and Heat Company established two storage fields in southwestern Pennsylvania for the underground storage of gas.

Field "A" was developed primarily for storage of artificial gas. The main producing sand is the Hundred Foot sand of the Upper Devonian system. The wells average 2000 feet in depth, and the sand averages 10 feet in thickness.

Approximately ¾ billion cubic feet of gas have been put into these wells, with a total withdrawal of 15% of the gas stored.

The average rock pressure of the storage wells has been increased from 140 pounds to 260 pounds.

Gas is stored into the wells from a compressor station with approximately 650 pounds discharge pressure and withdrawn at approximately 30 pounds pressure.

Field "B" was established for storage of natural gas. The main producing sands are the Salt, Big Injun, Fifty Foot, Gordon, and Fifth Sands, and the wells have an average depth of 2300 feet.

Approximately 1¾ billion cubic feet of gas has been put into this field, with a total withdrawal of 5 percent of the gas stored.

The average rock pressure of the storage wells has been increased from 105 to 175 pounds. No build-up in rock pressure has been recorded.

Gas is stored into these wells from a compressor station with approximately 250 pounds discharge pressure and withdrawn at approximately 10 pounds pressure.

* * *

By T. J. Tonkin, Jr.,
Vice President,
Central Kentucky Natural Gas Company,
Lexington, Kentucky

In 1919 we cautiously began feeding gas into the Menifee field, Kentucky, using gas purchased from producers in West Virginia and eastern Kentucky. At the end of the year we had put in storage 371,300,000 feet. We had increased the rock pressure one pound over the entire area for each 116,000,000 feet of net storage, which corresponded to the pressure drop experienced in withdrawals.

In 1920, 332,700,000 feet were put in storage with a like result. So in 1921, we stored 1,123,878,000 cubic feet. By the end of 1928, some 4,400,000,000 feet had been stored in excess of withdrawals, in addition to approximately 3,000,000,000 of the original gas estimated to be still available.

Storage operations since 1928 have been discontinued because we have been able to secure all of the needed gas from other sources except for very high peaks, and during the past 12 years, ¾ billion feet have been removed from storage, leaving a balance of 1,400,000,000 feet of stored gas.

* * *

By L. T. Potter
Lone Star Gas Company,
Dallas, Texas

Among two underground reservoirs used by the company for storage of gas in the vicinity of its pipe line system is the Cheaney field, 8 miles southeast of Ranger, Eastland County, Texas, producing from Marble Falls limestone of Pennsylvanian age. The field is a well defined anticline covering 2700 acres, producing from 20-foot pay at 3100 feet.

The field was put into use for storage in April, 1935, when 15 gas wells remained. The project was undertaken to prevent waste of residue gas from the casinghead gasoline plants connected to the company's pipe line system. The supply of such residue gas exceeded demand during low demand periods, and surplus supplies had been wasted to the air.

Up to now, two cycles of storage and return of gas have been completed.

Distillate Fields in the Gulf Coast; Their Importance to the Natural Gas Industry

By Charles D. Schmidt
and
R. L. Huntington
University of Oklahoma,
Norman, Oklahoma

During the past decade, the Gulf Coast area has drawn many manufacturing companies southward, due to the abundance of its gas reserves, which have an estimated life of at least 25 to 50 years.

A large percentage of this gas reserve is contained in deep distillate reservoirs which have been discovered in South Texas and Louisiana. These pools contain as a rule a single-phase fluid composed of 80 per cent or more of methane, with smaller percentages of other hydrocarbons, with boiling points running often as high as 600°F. The high gravity "distillates" or liquids which are condensed out of these reservoir fluids vary widely in physical properties from one area to another.

In order to justify a continued program of discovering distillate pools, the oil or gas company must have some substantial returns as soon as wells are drilled on a piece of property.

The drilling of wells on 10-acre tracts would be entirely out of the question in most distillate fields. In the first place, the total value of recoverable distillate would not as a rule equal the first cost of such intensive development. Furthermore, the effective drainage of widespread acreage will take place in single phase fluid or "distillate" fields in much the same manner as in gas fields.

It is probable that proper well-spacings will be found to be of the order of 80 to 320 acres, depending upon the allowables and the fluid contents of the particular reservoir in question.

Gas Storage and Its Effect on Transmission Operations

By S. A. Chadwell
Superintendent, Gas Control Department,
The Ohio Fuel Gas Company,
Columbus, Ohio

As the transmission of gas has increased in relative importance, so has its accompanying problems. One of the principal problems with which the industry is continually confronted is that of transporting the maximum day demands.

This problem can be solved either by expansion of the transmission facilities or by providing some type of storage near enough to the market that it may allow the existing transmission facilities to be operated at an improved load factor. To increase the transmission facilities means the investment of sums of money which would be prohibitive in many cases without an accompanying increase in rates.

The alternative is the provision of storage facilities that will result in an improved transmission load factor.

The holder type of storage is the oldest and simplest type, and is older than the natural gas industry itself. It lends itself very effectively to the shaving of peak hours and to some extent of peak days, but it is not adaptable to the leveling of seasonal peaks because of the large amounts of gas necessary to be stored.

The use of underground storage will result in the following advantages in operation, both economically and physically: (1) Improved load factor, (2) Increased flexibility of availability and utilization, (3) Conservation of gas, (4) Fulfillment of purchase gas contracts, (5) Storage of horsepower, and (6) Added assurance of continuity of service.

Underground storage permits the use of transmission lines during off-peak periods when those lines would not ordinarily be used at capacity to serve markets, thus increasing the load factor.

When underground storage is being contemplated, careful consideration should be given to the following: Specific need, source of gas, suitable pools strategically located with respect to markets, existing transmission facilities and their location as well as the additional facilities necessary.

Results Obtained with Cathodic Protection

By F. A. Hough
Distribution Engineer,
Southern Counties Gas Company of California,
Los Angeles, California

Many companies that are now using cathodic protection are using it only under restricted conditions until they can learn more about costs and the results obtainable.

"We have been using cathodic protection since 1932," states the author, "and are each year extending its use to more lines. However, we are not using the process to the extent that we would if all doubt concerning the conditions under which it works were cleared up. We have had no experience which, in itself, would lead us to doubt the efficacy of the process. On the other hand, our experience produces practically no incontrovertible evidence proving that the process does work."

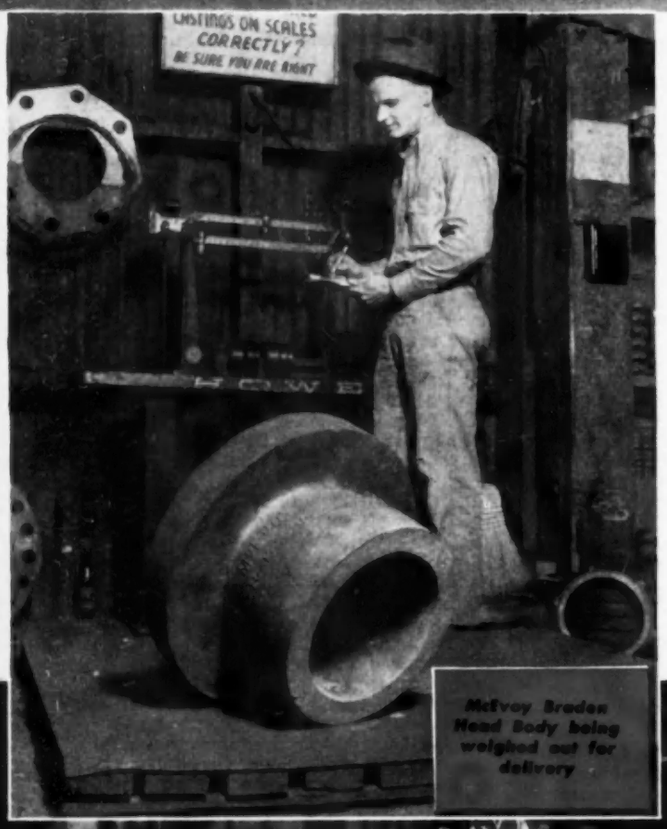
The author cites results obtained through cathodic protection on a considerable number of pipe line systems.

Recent Developments in the Application of Asphalt-Mastic Coating to Both New and Operating Pipe Lines

By W. W. Colley
General Manager,
Industrial Engineering Company,
Bartlesville, Oklahoma

Research studies and field investigations concerned with steel-pipe corrosion and its mitigation show the existence of several coating materials having the necessary physical properties to supply protection consistent with economic requirements. In the past, however, difficulties have arisen

OUR FIELD IS THE OIL FIELD



McEvoy Braden Head Body being weighed out for delivery

Such as Pouring the Steel for

McEVOY CASING and TUBING HEADS

McEvoy has been a familiar name in the oil fields since 1906 . . . and an accepted name, thanks to the ability of McEvoy designers to meet the ever changing requirements of this fast moving industry with dependable equipment. Take heads, for example. McEvoy was one of the pioneer manufacturers of braden heads and tubing heads and has kept pace, by consistent improvement, with the many problems resulting from increased drilling depths and mounting well pressures.

McEvoy Company don't stop with just dependable, workable design. They demand the best in steel for their customers . . . they specify a combination of alloys which give them top quality for strength and durability in braden head and tubing head pressure castings . . . call for reports on physical and chemical tests of samples from each heat. The TESCO hall-mark on this equipment is McEvoy's assurance . . . and McEvoy customers' assurance . . . not only of quality materials, but of complete chemical and physical control through every step in the making.

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Largest Producers of Alloy Steel Castings for the Oil Industry

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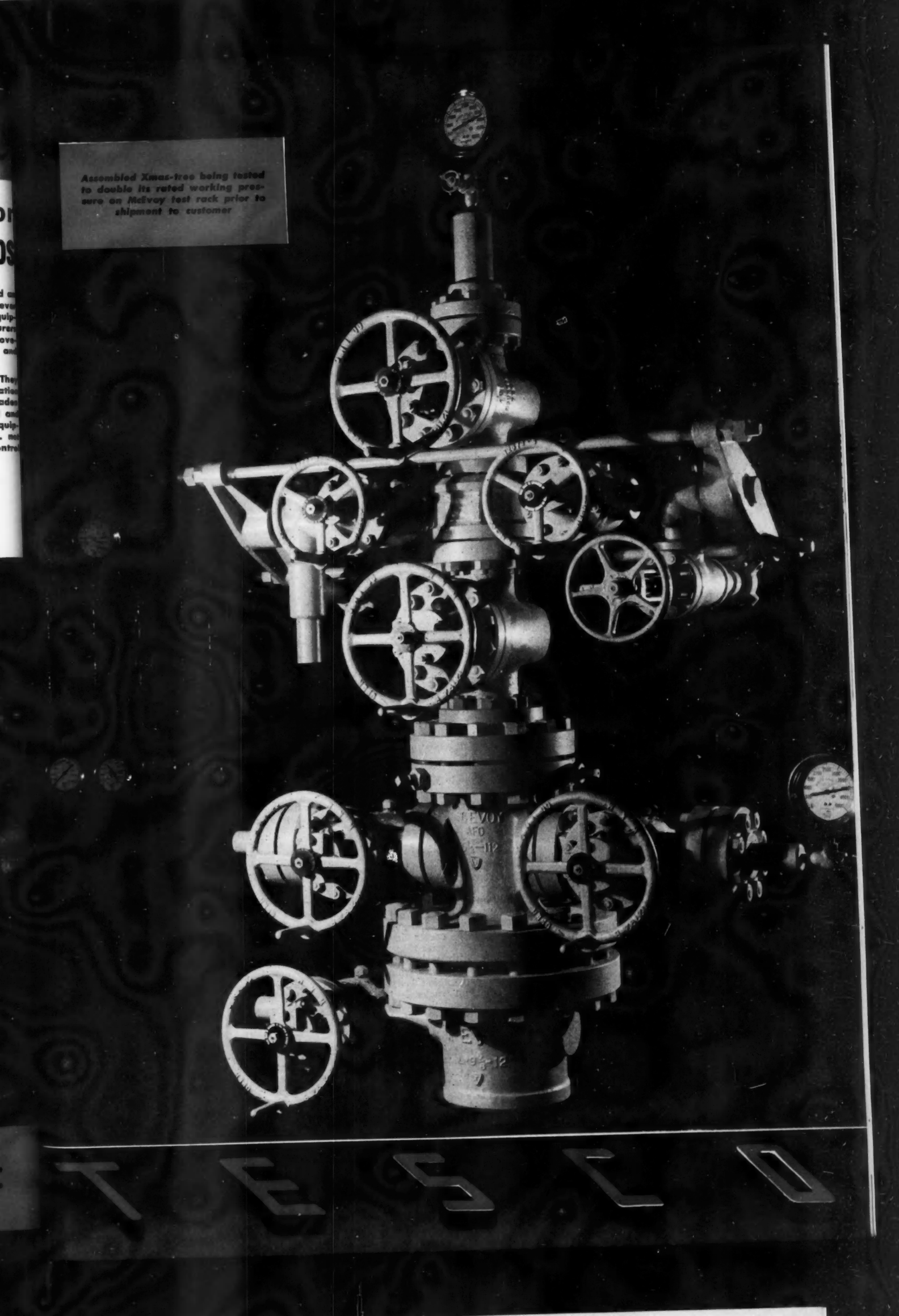

Assembled Xmas-tree being tested to double its rated working pressure on McEvoy test rack prior to shipment to customer

in the application of these materials to the pipe, with the result that the pipe line operator has not always been assured proper protection of his line.

The remarkable efficacy of thick asphalt-mastic coating in particular has been noted by investigators. Recent developments in the application of this dense material to the pipe indicate that equipment currently in use is adequate for this work. As now applied the asphalt-mastic coating withstands handling during pipe line construction, and in place furnishes the ultimate desired protection to the operating line.

Recent developments in the application of a suitable asphalt-mastic pipe coating indicate the complete feasibility of securing an operating line protected by a continuous, seamless jacket of thick, dense coating, thoroughly bonded to the pipe; free from holidays; and with welded field joints protected by overlapping mastic material of extra thickness. The three methods of applying asphalt-mastic coating to pipe lines, namely, at central plant, at railhead plant, or over-the-trench, provide a flexible operation capable of meeting varying line requirements.

Flow of Natural Gas in Rough Pipes

By Raymond Ransom
Panhandle Eastern Pipe Line Company,
New York, New York

The interior walls of present day commercial gas line pipe are both rough and wavy. Sometimes the degree of roughness is further increased due to corrosion or incrustation before as well as during use. Consequently, in order to better understand the design and operation of pipe lines we should investigate the flow of natural gas in these rough pipes.

The flow of fluids along rough surfaces has been long under investigation, in various industries. Steamship builders and naval architects have been interested in increasing the speed of vessels without unduly increasing the power required. The builders of highspeed turbines have studied the effect of roughness on the windage loss of turbine discs. While these industries have made valuable contributions, the major effort has been put forth by the aviation industry. The maximum speed of aircraft is greatly affected by the character of the ship's surface.

While the range of flow conditions in the early experiments was not great, they appear to have established that: 1. The principle of dynamic similarity applies to the flow of fluids through rough pipes. 2. So long as the fluid flow is viscous, the character of the pipe wall has no effect on the flow. 3. For pipes with wavy walls the coefficient of friction is equal to the coefficient of friction for smooth pipe times a factor which usually has a value between 1.0 and 2.0. 4. The coefficient of friction of a rough pipe reaches a constant value with increase of the Reynolds' Number and this constant value depends on the degree and nature of the roughness.

Introduction of Odorants into High Pressure Pipe Lines

By Thomas S. Bacon
Research Engineer,
Lone Star Gas Company,
Dallas, Texas

The Lone Star Gas Company has found it economically desirable to odorize its main transmission lines at points close to the gas fields in most instances. This odorization has been accomplished with odorizing equipment of several different types, all of which have been described in the literature. The vaporization type of odorizer is affected more than most other types by increase in pressure, and must be heated under some conditions. An automatic heater is described.

Odorization of high pressure transmission lines is entirely practicable with present day equipment, and satisfactory results are being obtained.

Radio Communication for Gas Dispatching and During Emergencies

By Warren T. Bulla
Natural Gas Pipeline Company of America,
Chicago, Illinois

Gas dispatching is the function of a certain unit of any gas pipeline company, needed to coordinate the activity of other departments, in delivering gas as needed by consumers, with efficient use of the capacity of the system.

During emergencies, a complete interruption, or when the capacity of the system is limited, the need for communication is greater, and the use of all types of communication becomes evident.

The use of radio has long been recognized as a means of augmenting the usual telephone and telegraph land lines. But adoption of radio by gas pipeline companies has been very limited, due to lack of knowledge that permission to operate emergency radio equipment can be obtained, lack of appreciation of the merits of such equipment for emergency use, or reluctance to obtain such equipment because of costs, supervising, and personnel problems.

Radio communication is necessary to provide communication during emergencies due to pipeline failures, in order that the disruption of gas service may be confined to a minimum period. Aside from this, radio will be of benefit in time of flood or local disasters, such as the Ohio River flood, when normal means of communication are rendered inoperative.

There now appears to be a favorable attitude on the part of government officials for granting permits to operate emergency radio equipment.

Emergency Repair Equipment and Material

By H. E. Smith
Division Superintendent,
Natural Gas Pipeline Company of America,
Great Bend, Kansas

The company has expanded its stock of emergency repair equipment and materials to such a point that it has excited favorable comment from other pipeline operators.

The operating pipeline organization consists of three divisions and seven districts, with maintenance crews located at 13 points. These crews, with three exceptions, which operate with pickup trucks, have 3-ton trucks equipped with winches, booms, pole trailers, and engine beds for heavy hauling and pickup trucks for light work and gang transportation. An adequate stock of small tools and material is maintained at each location.

Each district is equipped with a 100 cubic foot per minute portable air compressor with demolition, grinding and chipping tools and sand blast equipment. Each crew is provided with electric and acetylene welding equipment, lowering-in horses with hand winches, a tractor with tail winch, rolling scraper, slip scraper, Mormon boards, paint heating kettle, a 3-inch hand diaphragm pump, a 3-inch light engine driven centrifugal pump, a 4-inch 40,000-gallon engine-driven centrifugal pump, one or two 6-inch engine-driven 90,000-gallon centrifugal pumps (all crews except three have two 6-inch), a stone boat for hauling material behind the tractor, loading skids for easy loading and unloading of the tractor on the truck bed, a portable electric lighting system including an engine-driven generator, four standard lights, two floodlights, a trouble light and 1200 feet of cable, a 14 x 21 foot wall tent for use as an emergency office and warehouse, a wood stove for heating the tent, folding demountable benches and table, tool boxes containing emergency wrenches and hand tools, tool boxes containing maintenance tools, oils, grease and grease guns for the power equipment, and a box of office supplies for use in emergency work, including all payroll and employment stationery and employee indentification badges. A steel row boat is included at a few locations for use on flooded streams.

A short-wave radio communication system for emergency use has been installed on the northern end of the system.

Two high pressure engine-driven alcohol injection pumps are available in the field gathering system or where needed to spray alcohol into the lines to combat freezing.

Large All Welded Pipe Lines

By H. J. Carson
Vice President,
Northern Natural Gas Company,
Omaha, Nebraska

Solid welded construction in pipe lines has generally been limited to sizes varying up to 16 inches in diameter, although lines in larger sizes up to 26-inch have been built.

With improvements in all phases of welding and the increased experience and efficiency of welding personnel and a substantial background of experience in solid welded lines, there is now little question regarding the integrity and strength of welds. The more uniform wall thickness, sizing and squareness of pipe ends as furnished by manufacturers has facilitated welding in the larger sizes.

Solid welding for large welded lines laid in a straight line has been advocated by some engineers, and in any such cases the multiplicity of slight deviations from a straight line undoubtedly provide the equivalent of a small amount of slack, as such slight deviations may do in solid-welded railroad rails. Although slack may not be necessary, the flexibility it provides adds something to the line and it should be installed as far as practicable.

Analysis of Transmission Costs

By J. H. Lang
Superintendent, Pipelines Department,
Ohio Fuel Gas Company,
Columbus, Ohio

Analysis and control of costs are of vital importance and necessary to the profitable execution of the gas business.

The most effective and most certain way of increasing the net income is by increased sales, on the one hand, and by reduced operating expenses, on the other.

A combination of periodical analysis of costs and district performance, on the one hand, and proper cost-conscious supervision and leadership, on the other, probably will produce the most satisfactory results.

Ohio Fuel Gas Company has adopted the following in the various branches of transmission:

In the gas measurement department, the

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● YES, and it's a "worker" that is making more and more money in the oil fields, because it's designed clear through for money-*saving* hauling. With a wide range of wheelbases and body types 95 H.P. Ford V-8 Trucks are "tailor made" to your hauling and service needs. They are newly designed for engine and chassis accessibility which, combined with rugged Ford Truck construction, keeps maintenance cost at rock bottom. Built and powered for the toughest jobs. Priced to save you money. And their proved Ford V-8 gas and oil economy gives you *low-cost* hauling that you can't afford to miss.

If you're looking for ways to make more money for your oil field hauling, try a 95 H.P. Ford V-8 Truck on your job. Figure its costs yourself. You'll discover, as have thousands of truck operators everywhere, that you'll haul more, faster, and save more money with money-making Ford trucks.

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Range of 6 wheelbases and 3 engine sizes (60, 85, 95 h.p.) . . . 42 body and chassis types . . . Big hydraulic brakes . . . Full-floating rear axle in trucks (¾-floating in Commercial Cars) . . . New type drive system and two new longitudinal springs in front on regular trucks . . . Semi-centrifugal clutch . . . Improved, stronger cabs, more comfortable seats . . . Increased engine and chassis accessibility in trucks . . . Straddle-mounted driving pinion . . . Needle roller-bearing universal joints on all trucks . . . New, impressive styling . . . Sealed-beam headlamps . . . Large payload space . . . Ford low operating costs . . . Ford low upkeep costs with factory exchange parts plan.

FORD V-8 TRUCKS

most effective control has been exercised through the use of the comparative cost statements prepared on a unit cost per weighted meter operated and the use of the meter registration base. In the compressor department, unit cost per brake horsepower hour developed is used. In the pipe lines department, the unit cost per mile of equivalent 3-inch pipe line operated is the basis.

Every employee is made to realize that he has a financial responsibility in operations, that the material and equipment handled represent dollars and cents. The comparative cost statements are reminders that every bit of material, every operation, every item of supplies, every job accomplished, is measured in dollars and cents.

Review of Experiences Acquired Over a Period of Years in the Operation and Maintenance of a Natural Gas Transmission Line

By W. R. Beardsley
Superintendent of Gas Measurement, Colorado Interstate Gas Company, Colorado Springs, Colorado
and
C. B. Abbot
Assistant Engineer, Colorado Interstate Gas Company, Colorado Springs, Colorado

The Amarillo to Denver gas line extends from a point in the Amarillo gas field, 30 miles north of Amarillo, Texas, to Denver, Colorado.

Gas is supplied to the Denver district, Colorado Springs, Pueblo, the Arkansas Valley district between Fowler and Las Animas, and to a number of industrial plants.

The winter weather is subject to extreme variations in temperature which must be guarded against. Consequently, the operation of the line requires close supervision of dispatching.

Instead of an expected demand on the line of 80 million cubic feet, the demand on one certain day was in excess of 120 million feet. Wells had to be turned into the gathering lines in the field, compressor stations had to be speeded up and the system well-packed for the expected peak hour demand of 6500 M.C.F. the next morning.

When the demand exceeds the line capacity for more than 24 hours, industrial consumers must be contacted and their requirements reduced an amount sufficient to bring the demand within the line capacity. To take care of such emergencies, all industrial consumers are required to maintain sufficient stand-by equipment.

During the 12½ years of operation of the line, 14 washouts have occurred, including 12 on the main line and 2 on laterals. Since the cloudburst season occurs only in summer, when the heating load is off, it is possible to by-pass the gas around the 18-inch main line gates through 6-inch check valves, which will hold the gas in the line in case of a break on the upstream side.

Three pipe line camps have been built at strategic points along the line so that a maintenance crew will always be within reach of any section.

Freeze-ups due to the accumulation of hydrates in main transmission line and laterals during the winter formerly gave trouble. To alleviate freeze-ups, use was made of the fact that hydrates will melt and break up at a certain lower pressure if the temperature remains constant. Another method used to alleviate plugging of the lines from hydrates was the injection of alcohol just upstream from the point where stoppage occurred.

Since the presence of condensed water is necessary for hydrate formation, the removal of all water from the line will provide permanent relief from hydrate troubles. With this in mind, the company installed in 1934 a number of large reservoir drips at strategic points along the line, and siphon drips were placed in all prominent low points and sags.

As a permanent insurance against further trouble from hydrates, a calcium chloride dehydration plant was installed on the main line 20 miles north of the Bivins compressor station in the Texas Panhandle.

Determination of the Current Required for Cathodic Protection

By Scott Ewing
Research Associate, American Gas Association, Washington, D. C.

Data obtained in a laboratory investigation of the potential behavior of steel electrodes in soil to which cathodic currents are applied indicate that:

1. The potential of the metal with respect to a reference electrode taken alone, is no criterion of the rate at which the metal is corroding.

2. A suddenly applied protective current always causes the potential to shift in the negative direction, because the current exhausts the oxygen or increases the hydrogen content of the solution in contact with the metal.

3. The application of the protective current for several days may cause the zero current potential to change in either the positive or negative direction.

4. The protective current always causes alkali to accumulate on the cathode surface.

5. At low current densities, certain reasonable assumptions lead to the conclusion that the current density-potential curve is a straight line.

6. When the current density exceeds the protective value the log current density-potential curve is a straight line and it is called an over-voltage curve. This curve is nearly always obtained with steel cathodes in soils.

7. The current density at which the over-voltage curve begins is the minimum current density which will prevent corrosion.

Studies in Microbiological Anaerobic Corrosion

By Raymond Hadley
Susquehanna Pipe Line Company, Philadelphia, Pennsylvania

Although many American corrosion engineers are thoroughly familiar with microbiological anaerobic corrosion, they have in the past shown a pronounced reluctance to give credulity to this form of corrosion. When approached for the explanation of this apparent lack of interest, they have invariably stated that although the microbiological aspect of corrosion was quite interesting, they did not believe it was present in any appreciable quantity here in the United States. To correct this erroneous impression, data are submitted to illustrate the prevalence of this corrosion in several eastern states.

In many of the locations the bacteria undoubtedly are only partially responsible for the rapid corrosion at these points, whereas in other locations they are solely responsible for the abnormal corrosion. The determination of the relative degree of corrosion caused by the sulphate-reducing bacteria at any one location, of course, necessitates a much more complete analysis than a qualitative analysis of the corrosion products. Such an investigation should include a study of the electrical circuits involved, soil resistivity, an analysis of the soil and soil water, microbiological tests for determining the presence of the sulphate-reducing bacteria, pH of the soil water, a quantitative analysis of the corrosion products found on the pipe, and a study of any characteristic physical properties of the metal or of the corroding metal surface. Several such analyses have been made for different locations along the pipe line system in the state of Ohio, and at these particular locations the bacteria were found to be solely responsible for the abnormal rates of corrosion.

From data presented in the paper, it may be concluded that:

1. The basic theory underlying the microbiological anaerobic corrosion process is in accordance with the more commonly accepted electrochemical theory of corrosion, the principal differences being the manner by which the cathodic hydrogen polarization is removed, and the mechanism causing the suppression of the ferrous ions.

2. One of the component salts of the products of corrosion is FeS, which can under the conditions stated, result only from the metabolic activity of the sulphate-reducing bacteria and may therefore be taken as a definite indication of bacterial corrosion, if found in the corrosion products.

3. The prevalence of microbiological anaerobic corrosion, as shown by numerical data obtained from pipe lines in certain eastern states, is astonishingly common and is sufficient to account for a large quantity of the corrosion of the pipe lines from which these data were obtained.

4. Pit distribution curves show that for similar locations, geographically very close together, the pit depths where bacterial corrosions occur are greater than pit depths found at locations where bacterial corrosion is absent.

5. Pits occurring in a pipe at a location where microbiological anaerobic corrosion is not present do not represent the same degree of hazard, as do the characteristic slabs of the same depth found in locations where the sulphate-reducing bacteria are active.

6. The microbiological anaerobic corrosion process is not a process of the "self-stifling" variety. The pit depth rate instead of decreasing with time, actually shows a pronounced increase with time in some locations where the sulphate-reducing bacteria are active.

7. The data available at the present time from American sources relative to microbiological anaerobic corrosion is sadly inadequate, and should be supplemented not only by additional data pertaining to the distribution of this corrosion, but also by methods with which it may be economically minimized.

Treatment of Sour Gas

By W. R. Wood
The Girdler Corporation, Louisville, Kentucky

A little over a year ago it was found that a portion of the gas being produced from the Oriskany sand in the Elk-Poca field in West Virginia was sour.

Since the field supplies important markets in and out of West Virginia, it was decided that purification plants should be installed to insure that an ample supply of sweet gas would be available. In 1939 four new Girbotol desulphurization-dehydration plants were built in the area; and an exist-

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ing purification plant in a nearby field at Wayne, West Virginia, was converted to the Girbotol process. Thus five desulphurization plants within a radius of 30 miles were put into operation.

Following installation of these plants, hydrogen sulphide has no longer been a problem in West Virginia. There were no shutdowns caused by sour gas passing. There was no line blockage by gas hydrates, even though operating pressures were higher than average. Delivery quotas were not adversely affected by the purification plants, even though in two instances the plants were completed at about the time the winter load came on.

In the Girbotol process, sour natural gas is scrubbed in the absorber with a solution of monoethanolamine or diethanolamine. The hydrogen sulphide reacts, forming amine hydrosulphide in solution. Rich solution flows from the base of the absorber through the heat exchanger and into the reactivator. Hydrogen sulphide is released from solution in the reactivator and passes out the top of the tower to a flare. Amine solution continues down through the reactivator and is heated by rising steam until it reaches its boiling point as it passes through the reboiler. Regenerated lean amine solution flows back from the base of the reactivator through the heat exchanger to the pump, which forces the lean solution through the cooler and into the top of the absorber.

The cycle is equivalent to natural gasoline absorption.

Control equipment makes operation of the process substantially automatic. In several of the plants, one man who lives at the site is the only operator in attendance.

Purification plants have enabled producers to increase their nominations and to fulfill their delivery quotas, and have enabled pipe line companies to supply their peak demands. Price differentials between sour and sweet gas are sometimes favorable to the purchase and purification of sour gas by a pipe line company. The market value of sweet gas usually is high enough to justify purification by a producer.

Laboratories Study Boltless Couplings

By K. R. Knapp
Chief Engineer,
American Gas Association Testing Laboratories,
Cleveland, Ohio

Pipe couplings of different styles and design have long played a most important part in gas distribution lines. In the last few years the "boltless" type of coupling has been receiving considerable attention.

Two principal series of tests of this new type of coupling were conducted in the Testing Laboratories for the purpose of reproducing as far as practical the effects of service conditions. These included, first, repeated longitudinal movements of the pipe in and out of the coupling, and, second, repeated transverse movements of the pipe with the coupling restrained. The study was restricted to three sizes of boltless couplings, namely ¾, 1½ and 2 inches.

Based on the results of the different tests conducted, it appears that certain factors should be kept in mind to insure satisfactory performance. These include features not only of coupling and gasket design but their assembly as well.

It is felt that all couplings should possess adequate length. The performance of the shorter couplings was not as favorable as that of the longer ones. The desirability of providing for close confining of the gasket material and the absence of voids into which the gasket material could "cold-flow" was strongly emphasized by the results of the tests. These also showed that presence of sharp edges on metallic surfaces in contact with gaskets tended to cause damage to the gasket after repeated movements. In addition, the necessity for application of adequate torque in the assembly of the gaskets in order that best results might be obtained was clearly indicated. As the ability of a joint to withstand leakage in service depends largely on the proper confining of the gasket material and the maintenance of adequate pressure imposed during assembly, the advantage of insuring that both of these conditions are met will readily be apparent.

In view of the severity of the test conditions imposed, particularly in the case of the longitudinal tests, it is believed that couplings capable of withstanding them successfully should prove satisfactory under service conditions. In spite of the wide difference in the test methods employed, as between the longitudinal and transverse cycling tests, the same couplings gave the most unsatisfactory performance under each test condition.

Southern Natural Gas Will Spend $3,000,000 on Gas Line

Southern Natural Gas Company has announced it will spend $3,000,000 this year enlarging its Louisiana to Georgia pipe line to boost capacity about 30,000,000 cubic feet daily.

The program contemplates installation of 80 miles of pipe line, part of which will parallel the existing system extending from the Monroe gas field of Louisiana to Millidgeville, Georgia, and serving Birmingham and Atlanta. The company will also add approximately 13,000 horsepower in compressing stations now situated in Louisiana, Mississippi, Alabama and Georgia. A new station will be built at Tarrant City, Alabama, and one at De Armanville, Alabama, 4 miles east of Anniston, will be put back into use.

Montana-Dakota Utilities to Lay 105-Mile Gas Line

Montana-Dakota Utilities Company last week announced plans for a 105-mile 8-inch natural gas pipe line from the Bowdoin gas field, Phillips County, Northeast Montana, to the company's line from the Baker-Glendive gas field of Eastern Montana.

Cost of the line, which will extend from Fort Peck to Glendive, will approximate $1,000,000. The company's line serves Miles City, Montana; Rapid City, South Dakota, and Williston and Bismark, North Dakota.

Texas Awards Two Tracts of River-Bed Land

The Texas Board for Leasing State Lands has announced awards of two tracts in river beds:

Section 2, Block 2, 100 acres in the Big Wichita River, Clay County, to J. B. Cunningham, Wichita Falls, at $2000 in cash and a royalty of 26 percent.

Surveys 5 and 6, Potter County, 1930 acres in the Canadian River, to Panhandle Eastern Pipeline Company, Kansas City, for $8000 cash and 15 percent of the oil and 12.75 percent of the gas. This area already has one producing gas well.

March Domestic Production Breaks All-Time Record

Domestic crude oil production in March reached a new all-time high with a daily average of 3,873,400 barrels, or 126,200 barrels above the previous record of 3,747,200 barrels established in February and 429,300 barrels, or 12.5 percent, above the March, 1939, average of 3,444,100 barrels, it was announced May 10 by the United States Bureau of Mines.

Total production for the month reached the unprecedented total of 120,075,000 barrels, 11,407,000 barrels above the February output of 108,668,000 barrels and 13,307,000 barrels above the 106,768 barrels reported for March, 1939.

The heavy February and March production brought the total for the first quarter of the year to 341,883,000 barrels, compared with 302,733,000 barrels for the corresponding period in 1939, a gain of 39,150,000 barrels.

Virtually all of the gain in March was recorded in Texas and Illinois, the bureau reported, the latter reaching a new peak of 438,100 barrels a day, 33,700 barrels above February, which itself had established a record. In Texas, the Panhandle and East Texas districts showed little change but the other areas recorded material gains. Small gains were reported for Oklahoma, Louisiana and Kansas, but they were offset by a decline in California.

An increase from 3,509,000 to 3,551,000 barrels in daily average crude runs to stills and a fair expansion of exports did not take care of the large increase in production, the bureau found, so that the rate of accumulation for crude stocks again increased and about 6,700,000 barrels were added during the month, bringing the total for refinable grades to 251,120,000 barrels on March 31.

The report showed that although the peak demand for distillate fuel oil had passed, the yield of gasoline declined from 42.4 percent in February to the "unusually low" average of 42.2 percent in March. At the same time, the bureau pointed out, the yield of light fuel oil decreased materially, from 16 percent in February to 14.8 percent in March, while that of a residual fuel oil showed little change.

"The changes," it was observed, "indicate the difficult situation brought on by excessive runs to stills and unbalanced yields in prior months.

"The demand figures for motor fuel for March were not particularly encouraging, even though the domestic demand of 44,607,000 barrels was 5 percent above a year ago," the bureau continued. "Exports (2,265,000 barrels) were barely more than half what they were in March, 1939, hence the total demand showed practically no change. Gasoline stocks continued to rise to record levels; finished stocks were up about 3,700,000 barrels, unfinished another 700,000 barrels, making the total 103,710,000 barrels on March 31.

"The domestic demand for the various classes of fuel oil, including kerosene, continued to run well ahead of last year—kerosene was up 21 percent, gas oil and distillate fuel oil 18 percent, and residual fuel oil 9 percent."

Figures of the Bureau of Labor statistics placed the price index for petroleum products in March at 50.4, compared with 50.9 the preceding month and in March, 1939.

The crude oil capacity represented by the data gathered was 4,370,000 barrels, giving an operating ratio of 81 percent, the same as in February, compared with 77 percent in March of last year.

MEN IN THE INDUSTRY'S NEWS

J. A. BONHAM has been appointed manager of operations for Union Sulphur Company, effective May 1. The company, now operating as an oil producing Concern, has headquarters at Sulphur, Louisiana, but Bonham will continue to make nearby Lake Charles his home. He has been manager of the company's land department since April 1, 1937, prior to which time he was with Magnolia Petroleum Company in the land department. Bonham began work in the oil fields in 1912 as an employee of Gulf Refining Company of Louisiana in the Shreveport district. Subsequently, he was actively engaged in oil development in Arkansas, Texas, Louisiana and Mexico, except for two years spent as an air-service lieutenant during the World War. He has devoted most of his time to South Louisiana development since 1928, when he entered the employ of Vacuum Oil Company at Houston, having moved to Lake Charles in 1932.

JOE CANNON, geologist for Gulf Oil Corporation, has been transferred from Midland to the company's Fort Worth district office in connection with increased activity in North Texas. The Midland vacancy has been filled by G. R. Carter, formerly at Amarillo, and the latter has been succeeded by A. B. Van Tine, graduate of Colorado School of Mines.

J. C. CHATFIELD, for the past 18 years a staff writer for National Petroleum News, has resigned to join the Indian Territory Illuminating Oil Company. In this new position, Chatfield will keep the management of the company in touch with economic trends in the oil industry through statistical studies. He will also function in the raw products sales division of the company.

J. P. EDWARDS, replacing C. M. Cadman, recently deceased, and George J. Hanks, replacing Noel Robinson, resigned, have been elected directors of Tide Water Associated Oil Company. Eight directors reelected were Carl H. Beal, Adolphe Boissevain, Frank Haskell, John Hertz, Severance A. Millikin, R. B. Pringle, Paul Shoup, and Elisha Walker.

DAVID G. HAWTHORN, engineer for Amerada Petroleum Corporation, Tulsa, discussed "Electrical Logging While Drilling," before a joint meeting of the Kansas Geological Society and the Wichita chapter of the American Petroleum Institute on May 7.

JOSEPH GLASS, president of Midstates Oil Corporation, New York, accompanied by N. T. Gilbert, general manager, and J. C. Finley, chief geologist, both of Tulsa, inspected company holdings in West Texas and the Gulf Coast last week.

CLYDE DORR, consulting geologist at Oklahoma City, gave a resume of a recent field trip through the Cumberland district, southern Oklahoma, before a meeting of the Oklahoma City Geological Society, May 6.

I. W. HANSON, Standard Oil & Gas Company, presided at a dinner meeting of the petroleum industry tax representatives for the Kansas-Oklahoma area at Tulsa May 10. Judge James T. Shipman of Bartlesville discussed the function and accomplishments of the state court of tax review. John K. Speck, Oklahoma City, spoke on "Allocation of Income for State Income Tax Purposes."

G. C. GIBSON, Phillips Petroleum Company, was made president of the Oklahoma City chapter of the Munsch National First Aid Instructors Asociation at a recent meeting. A. A. Munsch, assistant technical safety advisor of the Bureau of Mines, Bartlesville, was present. Other officers selected were: A. H. Smallwood, vice president, R. M. Wilson, secretary, and Glen Hohimer.

S. M. McDONALD, until recently with the Louisiana State Geological Survey, is going with Kingwood Oil Company. He will be located at Jackson, Mississippi, as assistant district geologist.

W. SCOTT BUSH, Bush & Bearden Rig Company, Tulsa, retired from active Service, selling his interest to R. C. Bearden. Bush will move to his old home in Weston, West Virginia.

ROBERT S. CHRISTIE, Fort Worth district petroleum engineer for Amerada Petroleum Corporation, is recovering from an appendectomy in a Fort Worth hospital.

L. M. McLEMORE, Illinois field geologist for Kingwood Oil Company, has been transferred to Mississippi.

MEL B. DAVIS, Pampa producer, was elected president of the Texas Panhandle Producers and Royalty Owners Association at the annual meeting May 4 at Amarillo. Guest speakers included Dave Gray of Wichita Falls, executive vice president of the North Texas Oil & Gas Association; George C. Gibbons of Dallas, executive vice president of the Texas Mid-Continent Oil & Gas Association; Eugene McElvaney, Dallas banker; Ernest O. Thompson, Texas Railroad Commissioner; and Senator Clint C. Small of Amarillo.

HERBERT F. BEARDMORE, petroleum engineer for Amerada Petroleum Corporation, Tulsa, became the father of a seven-pound daughter on May 1.

PAUL ADAMS, head of the land department of Mene Grande Oil Company, has returned to Venezuela after spending several weeks in the United States.

DIED:

R. A. COX, West Central Texas oil producer, died May 4 at Fort Worth, where he had resided for more than a decade. He was stricken with pneumonia while supervising completion of a well near Brownwood, Texas.

A. R. TILLOTSON, who started as an operator in the Coalinga oil field and in 1912 transferred to Tampico, Mexico, to operate independently in Mexican oil fields, died May 2 in San Antonio.

Ernest S. Clements, retiring Louisiana Conservation Commissioner, shown at the left with B. A. Hardey, who was recently named to the post by Governor-elect Sam H. Jones, taken during a hearing on the Sugar Creek field which Hardey attended as a spectator. Clements' resignation became effective May 11, when he assumed his duties as state senator. Hardey, who is an Independent Petroleum Association of America vice president, will take office May 14.

Protracted Decline of Lube Features Market

Probably the most noteworthy development in the industry's market situation in the past 10 days has been the further extension of the decline in prices of lubricants, which has been under way since the beginning of this year.

Quotations of western Pennsylvania refiners now are around 2 cents a gallon lower than 10 days ago, for both bright stocks and neutral oils; while those of Mid-Continent refiners have been lowered from 1 to 2 cents, with the larger reductions applying to bright stocks.

Since the beginning of this year, western Pennsylvania refiners have lowered their quotations about 50 percent on bright stocks and 30 to 50 percent on neutrals. Meanwhile, prices have been reduced around 10 percent on both bright stocks and neutral oils at Mid-Continent refineries.

To show how lubricant prices have declined this year, following their sharp rise last fall, figures are herewith presented:

Item	Cents a Gallon
Western Pennsylvania—	
Bright stock, 145-155 viscosity at 210°, 25 pour test:	
January 2, 1940	32 to 35
March 1	25 to 27
May 7	20 to 21
Neutral oil, No. 3 color, 150 viscosity, at 70°, 25 pour test:	
January 2, 1940	28 to 30
March 1	25 to 26
May 7	20 to 21
Oklahoma Refineries—	
Bright stock, 150-160 viscosity at 210°, 10-25 pour test:	
January 2, 1940	23 to 24½
March 1	23 to 24½
May 7	18½ to 22½
Neutral oil, pale, No. 3 color, 150 viscosity at 100°, 0-10 pour test:	
January 2, 1940	12¼ to 13⅞
March 1	12 to 13¾
May 7	10½ to 12¾

An important factor in the increased weakness of lubricants lately has been the languishing of export demand, in contrast with the brisk foreign business until some weeks ago. Meanwhile, domestic shipments against contracts have continued relatively good.

Gasoline and Kerosene

While the lube oil market has been under pressure, the gasoline market has performed as well as could be expected with stocks as large as they are. Tank car prices of gasoline have been largely unchanged for some weeks. In the Middle West, demand has been retarded somewhat in the past 10 days by cool and wet weather, but quotations have held steady.

Crude Oil Market

The crude oil markets have been helped psychologically by the adoption of stricter allowables for May and the resultant cutting down of production, as reflected in the latest weekly statistics of the industry.

While prices of crude in the Mid-Continent have been steadied by the allowable situation, there has been a 5-cent increase in the posting for crude from the shallow fields of southwestern Michigan. That oil now is priced at $1.08 a barrel, about 27,000 barrels a day being affected, out of a state total of approximately 60,000 barrels daily. The demand for crude in that area is good, and supply for two months has been diminishing, as new fields have not come in to compensate for declines of established areas. In the rest of the state prices have not been changed since last October, being still within a range of 82 cents to $1.02 a barrel.

PRODUCT PRICES

	Range Last Week (Cents a gal.)		Changes from Week Before	
REFINED GASOLINE				
Oklahoma Refineries:				
60 Octane and under	4	4¼	...	+¼
63-66 Octane	4¼	4⅜	...	...
72-74 Octane	4⅜	5¼	...	...
Mid-Western Tank Car:				
60 Octane and under	4	4¼	...	...
63-66 Octane	4⅜	4⅜	...	...
72-74 Octane	4⅜	5¼	...	...
New York Harbor:				
70 Octane and under	6¼	6½	...	...
72-74 Octane	6¼	7	...	—¼
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	1⅛	1⅛	...	...
F.O.B. Breckenridge, Texas	1¼	1¼	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4	4¼	...	...
42-44 water white	4⅛	4⅝	...	...
Mid-Western Tank Car:				
41-43 water white	4	4¼	...	...
42-44 water white	4⅛	4⅝	...	...
New York Harbor:	6	6	...	...
RANGE OIL				
At Oklahoma Refineries	3⅝	3⅞	...	...
In Mid-Western Market, Group 3 basis	3¾	3⅞	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 straw	3⅝	3¾	...	...
No. 3	3¼	3⅝	...	...
Mid-Western Tank Car:				
No. 1 straw	3½	3⅝	...	...
No. 3	3⅛	3⅜	...	...
New York Harbor:				
No. 1	6	6	...	...
No. 3	5½	5½	...	...
HEAVY FUEL OILS (Per Barrel)				
Oklahoma Refineries:				
No. 6	50	55	...	...
Mid-Western Tank Car:				
No. 5	75	75	...	...
No. 6	45	55	...	...
New York Harbor:				
No. 5	$1.70	$1.85	...	...
No. 6	1.50	1.50	...	...
BUNKER C FUEL OIL (Per barrel, ships bunkers)				
Gulf Coast	$ .90	$ .95	...	+5
New York Harbor	1.50	1.50	...	...
DIESEL OIL (Per barrel, ships bunkers)				
Gulf Coast	$1.70	$1.70	...	...
New York Harbor	2.20	2.20	...	—15
Los Angeles Basin, 27 gravity	1.05	1.40	...	...
LUBRICATING OIL				
Oklahoma Refineries:				
Bright stock, 150-160 viscosity at 210°, 10-25 pour test	18½	22½	—1½	—2
Neutral oil, pale, No. 3 color, 150 viscosity at 100°, 0-10 pour test	10½	12¾	...	—1
Western Pennsylvania:				
Bright stock, 145-155 viscosity, at 210°, 25 pour test	20	21	—2	—2
Neutral oil, No. 3 color, 150 viscosity, at 70°, 25 pour test	20	21	—2	—2

Operating Levels Are More Favorable Temporarily

Latest statistics of the industry were predominantly favorable, having reflected curtailment of both crude production and crude runs to stills; although the production decline was of temporary nature, as it resulted largely from the one-day shutdown of Texas fields scheduled for May.

Meanwhile, the reactions of inventories were generally satisfactory, gasoline stocks having been reduced somewhat, while the needed build-up of heating oil storage was continued.

Production and Runs

United States crude oil production in the week ended May 4 averaged 3,679,050 barrels daily, according to the American Petroleum Institute, having come down by the large amount of 166,200 barrels, to within about 85,000 barrels of indicated market demand, with Texas accounting for 147,950 barrels of the total decrease. The production then was 2.7 percent larger than in the corresponding week last year.

Crude runs to stills were reduced 50,000 barrels to 3,505,000 barrels daily in the week of May 4, and were 4 percent above the April-May daily average of last year.

Gasoline Situation

Production of gasoline was increased a little, in the face of the curtailment of runs to stills, having totaled 11,370,000 barrels during the week, or 94,000 less than in the preceding seven days.

With demand comparatively good, however, the markets absorbed the current production of gasoline and also 389,000 barrels from storage, as stocks came down to 102,063,000 barrels. This was the second week of decline from the all-time peak of 102,817,000 barrels established April 20. The present stocks are 15,000,000 barrels, or 17 percent, greater than those held a year ago.

Fuel Oil Stocks

Stocks of light fuel oils, that is, gas oil and distillate fuels, were increased 661,000 barrels in the week of May 4, having been expanded to 25,658,000 barrels, in extension of the seasonal trend. That total was 3.7 percent smaller, however, than the supply of 26,644,000 barrels held a year previously; whereas demand is greater.

Inventories of heavy fuel oils, after having come down in the previous week, went back up a somewhat smaller amount in the week ended May 4, to 103,043,000 barrels. They still were, however, 6 percent smaller than a year before, although demand is larger.

Crude Stocks Increase

Stocks of crude oil in the United States have continued to increase. They expanded about 1,800,000 barrels in the week ended April 27, the Bureau of Mines reported. The 256,670,000 barrels then on hand embodied an increment of over 27,000,000 barrels since late October, when stocks were at a 17-year low, following the Mid-Continent oil field shutdowns. The present supply is

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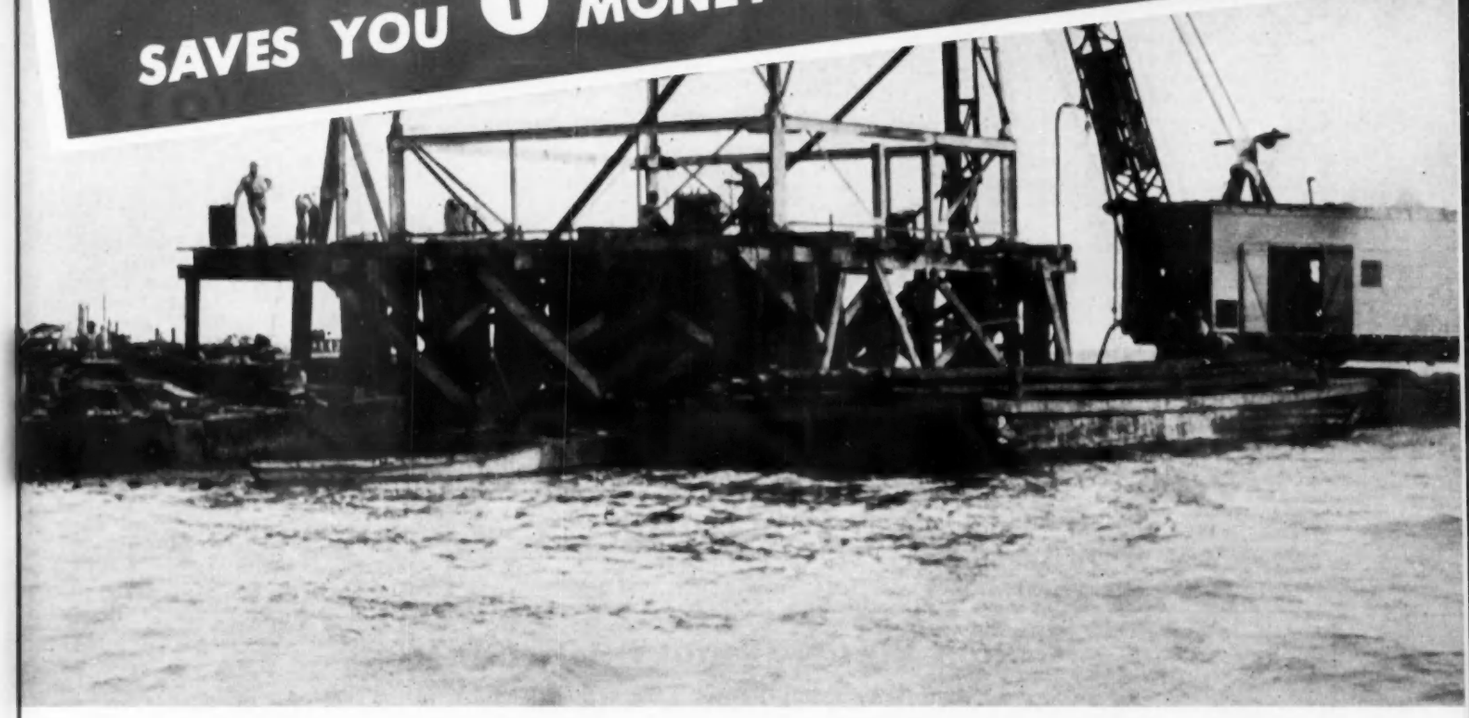

① **HOW IT SAVES YOU MONEY**—Timber piles are much less expensive than other forms of piling. Even when pressure-creosoted, they may cost as little as one half of other permanent forms of support.

Because of the long service life of pressure-creosoted piles, (there are records of 30 to 50 years of service under severe conditions) there is little or no maintenance cost.

② **HOW IT SAVES YOU TROUBLE**—In salt water drilling, the oilman has to face the added problems of marine construction.

The destructive action of salt water itself on some materials is one complicating factor. (Salt water does not affect pressure-treated timber).

The attacks of marine borers which destroy unprotected timber is another difficulty. (Pressure treatment with creosote effectively repulses attack by marine borers).

The danger of impact by boats and barges against the derrick base is another source of trouble. (Timber piles have a resiliency which enables the structure to give slightly and safely under impacts).

Then there is the old problem of the destructive action of decay in moist locations. This, too, is prevented with pressure-creosoting.

The Wood Preserving Corporation has experienced engineers who have worked for years with the problems of marine construction and oil field construction. They will be glad to help you with any problems.

Send for your copy of the booklet "Oil from Water" which explains how pressure-creosoted timber is used in salt water drilling.

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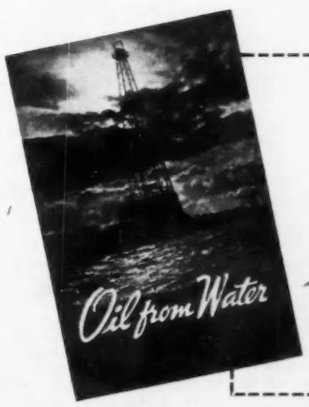

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Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks[7] (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937:						
August 28	[5]3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	[5]3,455,000	307,974,000	65,620,000	116,472,000	
1938:						
March 19	3,433,550	3,080,000	306,380,000	[5]93,192,000	122,067,000	
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,687,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939:						
January 28	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
May 27	3,585,250	3,405,000	278,289,000	84,152,000	26,992,000	109,386,000
June 24	3,452,800	3,430,000	272,297,000	81,733,000	30,239,000	111,726,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[9]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[1]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 30	3,545,000	3,445,000	237,742,000	80,985,000	34,184,000	106,680,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 6	3,745,000	3,455,000	251,897,000	101,945,000	23,551,000	103,299,000
April 13	3,853,800	3,570,000	252,269,000	101,837,000	24,237,000	102,595,000
April 20	3,858,550	3,535,000	254,881,000	[1]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 4, 1940	3,679,050	3,505,000	.....	102,063,000	25,658,000	103,043,000
May 6, 1939	3,580,900	[8]3,368,000	[4]278,444,000	87,101,000	26,644,000	109,523,000
Change in past year	+2.7%	+4.0%	—7.8%	+17.1%	—3.7%	—5.9%

[1] All time peak. [2] Peak for 1939. [3] Lowest since April, 1922. [4] Stocks, April 29, 1939.
[5] Peak prior to 1939. [6] Lowest for year. [7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California. [8] April-May, 1939, daily average. [9] Lowest since October, 1922, due to the shutdown of six Mid-Continent States.

within about 10,000,000 barrels of that on hand at the commencement of the half-month shutdowns last August. It is about 20,000,000 barrels, or 8 percent, less than the storage held at this time last year.

Crude Production Rebounds From Temporary Low Level

Following the temporary sharp curtailment of the week before, when Texas shut all wells in for a day, United States crude oil production expanded almost as much as it had contracted, having increased 135,700 barrels in the week ended May 11, to 3,818,675 barrels daily.

At that rate, the nation's wells were turning out over 200,000 barrels a day in excess of indicated market demand, the Bureau of Mines having estimated the need for domestic crude at 3,601,000 barrels daily on the average in May.

Of the surplus production of over 200,000 barrels a day, however, a part was compensated in the previous week by a deficiency in Texas through the one-day shutdown May 1. The Texas output in the week of May 11, having totaled 1,460,200 barrels daily, was for the period about 115,000 barrels a day above indicated demand.

Illinois continues to account for a noteworthy part of the national overproduction, the output of 428,500 barrels daily in the week of May 11 having been 35,000 barrels above indicated market demand. However, the output was 4400 barrels a day smaller than in the previous week, and well below the record production of over 450,000 barrels daily, established some weeks ago.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (May)	State Allowable in May	BARRELS DAILY FOR WEEK ENDED	
			May 11	May 4
TEXAS—				
Texas Panhandle	.....	.....	76,900	77,550
North Texas	.....	.....	107,500	102,600
West Central Texas	.....	.....	33,500	33,050
West Texas	.....	.....	263,200	233,300
East Central Texas	.....	.....	87,200	80,900
East Texas Field	.....	.....	396,700	396,650
South Texas	.....	.....	248,500	214,100
Texas Gulf Coast	.....	.....	246,700	229,650
Total Texas	1,344,200	1,420,500*	1,460,200	1,367,800
CALIFORNIA—				
Long Beach	.....	.....	46,300	44,900
Midway-Sunset	.....	.....	59,200	49,000
Kettleman Hills	.....	.....	43,600	43,900
Wilmington	.....	.....	84,800	82,500
Others	.....	.....	393,900	365,800
Total California	592,600	592,000†	627,800	586,100
OKLAHOMA—				
Oklahoma City	.....	.....	93,000	98,500
Seminole Area	.....	.....	97,750	103,200
Others	.....	.....	219,175	211,275
Total Oklahoma	408,100	408,100	409,925	412,975
ILLINOIS—				
Salem	.....	.....	249,700	258,850
Louden	.....	.....	68,850	71,750
Other New Pools	.....	.....	100,850	93,700
Old Pools	.....	.....	9,100	8,600
Total Illinois	392,900	.....	428,500	432,900

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (May)	State Allowable in May	BARRELS DAILY FOR WEEK ENDED	
			May 11	May 4
LOUISIANA—				
North Louisiana	.....	.....	69,500	69,475
South Louisiana	.....	.....	228,500	224,000
Total Louisiana	264,500	293,080	298,000	293,475
KANSAS	158,100	158,100	149,350	147,650
NEW MEXICO	103,900	107,000	106,900	108,600
EASTERN STATES—				
Pennsylvania Grade	52,100	.....	80,500	76,400
Others, Eastern	49,200	.....	20,000	20,200
Total Eastern States	101,300	.....	100,500	96,600
MOUNTAIN STATES—				
Wyoming	72,900	.....	68,200	69,500
Montana	17,400	.....	17,500	17,500
Colorado	3,500	.....	3,800	3,700
Total Mountain States	93,800	.....	89,500	90,700
MICHIGAN	63,200	58,000	60,600	59,700
ARKANSAS	64,500	70,000	70,200	69,175
INDIANA	8,100	.....	9,700	9,500
MISSISSIPPI	5,800	.....	7,500	7,800
‡Total 8 Prorated States	2,999,100	3,106,780	3,182,975	3,045,475
Total United States	3,601,000	.....	3,818,675	3,682,975

*** Net daily average, considering general shutdown May 1, and 14 shutdown days in East Texas Field.**
† Recommendation of Central Committee of California Oil Producers.
‡ Texas, California, Oklahoma, Louisiana, Kansas, Arkansas, Michigan, New Mexico.

WORLD-WIDE DEVELOPMENTS

By WM. V. GROSS, Associate Editor

Mexico

Expropriation Note Answer Not Satisfactory to U. S.

Holding that Mexico's answer to Secretary Hull's note of April 3 is unsatisfactory, the State Department is expected immediately to send a new protest against the treatment accorded the American oil companies.

Administration officials in Washington were represented as "uninfluenced" by the reported Mexican settlement with Consolidated Oil Corporation and the suggestion by the Mexican government that other settlements are in prospect.

In the new note, the department is expected to urge that, despite Mexican opposition to that course, in the interest of good international relationships the whole expropriation controversy should be submitted to arbitration.

Sinclair Makes Deal

Simultaneously with release of the Mexican note, it was reported to Washington that the Mexican government had made an agreement with the Consolidated Oil Corporation (Sinclair) under which that company would receive some $13,800,000 in compensation for the expropriation of its properties.

Under that agreement, it was said, the company would receive $9,000,000 in cash, to be paid in quarterly installments of $750,000 each over a period of three years, and would be given a lower-than-market price on 30,000,000 barrels of oil.

At the same time, it was rumored, Consolidated Oil Corporation may become the sole distributor of Mexican oil in world markets. The 30,000,000 barrels which it would receive at a low price would be delivered over a maximum period of six years, the exact time, it is believed, depending upon the ability of the company to provide tanker space to move the oil from Mexican ports, at which it is to take possession.

In view of the restrictions of the Venezuelan trade agreement on the amount of Mexican oil which can be imported into the United States at the cut excise tax of 10½ cents per barrel, the agreement, if actually made, was not viewed in administration circles as cutting much of a figure in the domestic situation. Mexico's entire quota for 1940 was filled by the middle of last month and any further imports this year will have to pay the full tax of 21 cents per barrel.

Mexico's Statement

In a formal statement May 8, Dr. Francisco Castillo Najera, Mexican ambassador at Washington, confirmed reports from Mexico City that a "mutually satisfactory settlement" had been reached with the Sinclair interests and extended an invitation to other companies to make similar agreements.

"The friendly attitude of Mr. Harry F. Sinclair, and the intelligence, tact and perseverance of his representative, Patrick J. Hurley—who without dismay and all through the long negotiations worked continuously to eliminate the numerous obstacles opposed to an agreement—are, in a great part, responsible for the complete success of the negotiations," the ambassador said.

"I consider that this step is a very important factor toward the total solution of the oil problem, inasmuch as it is an irrefutable proof that acting, just as the Mexican government has invariably acted, in good faith and with a high spirit of justice, there is no reason whatsoever to suppose that settlements similar to the one completed with the Sinclair group, cannot be concluded between the interested parties and the same government."

Charge Company Delay

In its answer to Secretary Hull's note of April 3, the Mexican government rejected the suggestion of arbitration on the ground that the Havana treaty of 1929 does not necessarily apply to pecuniary claims, that the confiscation of the oil properties is a domestic question and that there has been no denial of justice in the Mexican courts.

The Mexican government insisted upon its "determination to pay the indemnity which is proper" and that the fact the oil issue has not been settled "is to be attributed to the companies themselves which have systematically refused to allow the value of their properties to be determined."

Throughout the note, the attitude of the companies was commented upon unfavorably as being directed towards delaying settlement of the dispute, "by means of which they have caused serious economic injury to Mexico and to the commercial relations between our two countries, the said companies even going so far as to cherish the hope that these differences which ought not to exceed the bounds of a dispute between the government and a group of private companies, should weaken the bonds of friendship which unite our two peoples."

While it is true that the expropriations occurred "precisely when there appeared to be presenting itself a prospect of an adjustment regarding some pending questions," as charged by the State Department, the note denies that the time was chosen by the Mexican government but that it "was obliged to act in view of well-known circumstances."

It is equally true, as charged, that there have been delays in the legal proceedings in the Mexican courts, it was admitted, but this was said to be due to the periods which the law grants for the filing of petitions and appeals.

The charge that the expropriations, because of the lack of just and prompt compensation, were confiscations, was denied, however, and "Mexico considers that it is not in such a situation, since it not only has manifested its desire to pay, but also has expressed unequivocally its readiness to do so, having done everything that it should in accordance with its own laws, in order that ultimately the total amount may be fixed that is to be paid."

The position of the Mexican government with respect to arbitration, the note explained, is that it "must not be admitted except when the nation has put into practice in full its rights of sovereignty through the action of the courts and the existence of a denial of justice can be proved."

In this, it was contended, other Latin American countries have concurred and "the unanimous will of the continent has been exhibited in the sense that international action in favor of foreigners is only proper when, domestic legal recourses having been exhausted, a case of denial of justice can be shown." Accordingly, the Mexican government considers arbitration "incompatible" with those principles, since the matter is near solution by the authorities of Mexico.

Comment on Sinclair Deal

"My government has authorized a private and direct arrangement with the 'Sinclair' group, which represents approximately 40 percent* of the investments of American nationals in the oil industry, and which, accepting the expropriation as definitive, will limit itself to discussing the amount of the indemnity and the conditions of payment, in reasonable instalments, recognizing the justification of the Mexican point of view," it was declared by Foreign Minister Eduardo Hay. "With respect to the rest of the American companies, my government repeats its readiness to arrive as soon as possible at a just and suitable settlement in case they should prefer, before the decision of the Mexican courts, to enter into direct arrangements on the indemnification which is to be allowed them and the conditions of payment and, therefore, they may follow the same procedure, if they are really disposed to settle this question; with the understanding that, my government taking into account that it follows from Your Excellency's same note that a chief point of interest of the American oil companies is that they be given securities for the payment of the indemnity my own government is disposed to accomplish the said payment immediately after reaching an agreement as to the amount of the corresponding indemnity."

Oil company executives this week were exercised over the charge that they had delayed settlement of the issue, and pointed out that any discussions would have been futile since they had been informed that sub-soil petroleum would be ignored in arriving at any settlement.

The oil company representatives also pointed out that Secretary Hull's note made no reference to the 1929 Havana treaty which Mexico cited as a reason

*Financial circles estimate this at only 5 percent—$16,000,000 of the $200,000,000 American investment involved.

for refusing arbitration, and agreed that that agreement was not applicable to the oil dispute.

So far as the agreement with the Sinclair interests is concerned, it was said, that group had not joined with the other American oil companies in the effort to reach a settlement, so that the action constitutes no break in any "united front." Further, it was pointed out, no agreement as to the amount and method of payment has yet been reached even with the Sinclair interests, so that there is no real change in the situation.

The settlement proposed to Sinclair, providing for payment in large part with oil taken from other seized properties, it was asserted, could be applied only to the smaller concerns involved in the confiscation, and the acceptance of such a proposal by the larger companies is highly improbable.

The question of United States relations with Mexico also was raised in Congress, where Representative Thomas C. Hennings, Jr., of Missouri, urged adoption of his resolution for an investigation of the activities and policies of the Mexican government.

"It is the duty of the Congress to investigate the serious charges that have been made against Mexico by the Secretary of State and by citizens of the United States," he said.

"We have been sympathetic with Mexico's alleged aspirations of social betterment for her humble people, even when it appeared that her program was merely a pretense behind which a few military and political favorites of the government might acquire the wealth of the nation. We have demonstrated beyond cavil our. desire to be a good neighbor. But Mexico has resisted our friendly advances and disregarded our friendly admonitions to conform the conduct of her social reforms to the requirements of justice and law."

U. S. Congress Aroused

In the Senate, Senator Reynolds of North Carolina on May 6 called on the Treasury to discontinue the purchase of Mexican silver because of the "unfriendly" attitude of that country.

"If we have not been friendly to Mexico, no country in the world has ever been friendly," he said. "What do we get as a result thereof? We get a 'kick in the pants,' and have 1,000,000 Mexicans in the United States to be employed by American industry and individuals in preference to American working men."

On the same day, in the House, Representative Short of Missouri declared that, in its expropriations, "the government of Mexico is as guilty of theft as a plain highwayman."

"The time for further forbearance in the matter has passed," he explained. "It is time to call a spade a spade and a thief a thief."

Representative Short told the House that the policy of the Administration with respect to the oil expropriations has been a mistake.

"The amazing thing is that the Secretary of State has asked the government of Mexico to arbitrate the unlawful confiscation of the property of our citizens," he declared. "You cannot arbitrate robbery.

"What is there to arbitrate, to compromise, about these Mexican confiscations anyway? A horse-high, hog-tight, bull-strong case of robbery is standing against Mexico. Will our government take the kind of action now that it has been taking for 150 years in similar matters? All of the protestations to the contrary of Cardenas, his officials and his friends—who call themselves fellow travelers, comrades of similar ideology, and friends of Mexico—fail to weaken a single element in the damning structure of the case."

Not considering what may be due American companies as a result of the oil expropriations, the Missouri Congressman said, there is a total of $1,378,679,000 already due on awards and claims and unpaid by the Mexican government.

The remedy for the situation, he said, lies with Congress, which has "the same power, without restrictions, to deal with Mexico that it had to deal with piracy in the early days of our Republic."

"Congress can direct suitable reprisals against Mexico," he explained. "Congress can declare a partial or complete embargo against Mexico. Congress can refuse to purchase silver or any other commodity from Mexico. Congress can refuse immigration from Mexico. Congress can put a proviso in the diplomatic and consular appropriation bill that no part of the money appropriated may be used for the maintenance of an Embassy in the City of Mexico. Congress has enacted such laws in the past for the redress of such wrongs against citizens of the United States as those of which Mexico is guilty. We can employ economic force. The hour has now struck when the United States government must cease coddling the Communists."

Argentina May Advance Funds For Sanandita Development

Argentina once more has entered into negotiations with Bolivia and will advance certain funds for the construction of the first sector of the railway connecting the Bolivian oil fields with the Argentine state railway system. In addition, the very modest amount of 500,000 Argentine pesos will be advanced to Bolivia for drilling in the Sanandita zone, and repayment of the first mentioned funds will be made in oil, produced in Bolivian oil fields.

The Bolivian oil fields are now owned by the state; but it is well known that they belonged originally to Standard Oil Company from which they had been "expropriated" without compensation early in 1937, under rather peculiar circumstances. After the first excitement had calmed down, the Bolivian government of the late Colonel Busch and of the Secretary of Mines Foiannini soon recognized that oil fields cannot be run by bureaucrats or by retired generals. That is why they approached Yacimientos Petroliferos Fiscales which helped their Bolivian sister organization with some machinery and encouraged even some retired mining engineers to work for the Bolivian authorities.

At the same time, President Busch had entered into negotiations with Germany. The German government was ready to put at Bolivia's disposal a revolving credit of five million reichsmark, to be used for the purchase of material for the construction of a pipe line from the oil fields to the Argentine railway system, and for further prospecting. This credit was to be repaid by tin-ore and copper-ore certificates to be handed over to Germany by the Bolivian government which had already created for that purpose, an ore-purchase monopoly for the state mining bank. There had been also rumors that a similar deal was prepared for construction of a railway connecting Bolivia and Brazil, and that political advantages to be granted to Germany had been discussed.

This agreement was signed by Germany exactly one week before the European war broke loose. It is obvious that neither Germany nor any other European nation or Japan, will be able to assist Bolivia in developing her oil resources, whereas the United States has no intention to do so as long as no satisfactory indemnity has been agreed upon between the Bolivian government and Standard Oil Company.

On the other side, both Argentina and Brazil are greatly interested in Bolivian oil. Relations have been rather tense during recent months, between those Argentine quarters interested in foreign trade transactions, and some of the Argentine manufacturers represented by the Industrial union who insist upon all-around protection for industries existing and to be created, in times of war and in times of peace. From the point of view of oil supply, Argentina is lucky to have her manufacturing in a rather elementary stage, as otherwise fuel shortage would make itself felt more than it does.

British coal imports together with occasional South African and American imports have proved to be satisfactory, so far, although it is by no means certain whether their level can be maintained in the months to come. The situation regarding petroleum is much more difficult due to the scarcity of tankers. Argentina recently dispatched a tankship built for the Buenos Aires-Comodoro Rivadavie run, to Trinidad regardless of the high fuel expenses involved. Rates for tankers are high and endanger the industrial price level.

Search for new oil fields gave satisfactory results in Mendoza which, however, do not solve the Argentine oil problem. It is noteworthy that also Brazil reports "surprising" results of the search for oil in Lobato (State of Bahia) where a recently developed well is reported to yield 100 to 125 barrels daily but is expected to yield 600 barrels.

Argentina's national oil production was 2,959,168 cubic meters in 1939, 1.6 millions of which came from fiscal oil fields. (Fiscal production rose from 34.47 percent of the total in 1934, to 54.92 percent in 1939.) Compared with this quantity, the actual Bolivian production of approximately 20,000 tons is insignificant especially as the largest part of this quantity would be needed by Bolivia herself. The Argentina-Bolivian agreement is of importance for Argentina's fuel supply—as will be seen from the above figures—only if Bolivian production could be considerably increased which would be worthwhile in view of its excellent quality. This increase requires, however, a very considerable outlay of capital and neither Bolivia nor any other South American government has funds for investment, nothing to say of competent engineering specialists. The return of the oil fields to Standard Oil Company appears as the only feasible way in order to raise Bolivian petroleum production.

U. S. FIELD OPERATIONS

Kansas

Large Barton County Well Opens Arbuckle Lime Pool

M. B. Armer and Vernon Oil & Gas Company opened a new pool in Barton County with Hoffman 1, NWc SW 18-16-11w. Originally completed in July, 1939, in the Lansing lime for 527 barrels, operators deepened to 3321 feet in the Arbuckle and after 500 gallons of acid, established a potential of 12,000 barrels daily, but was completed for a maximum potential of 3000 barrels by state requirement. This discovery, designated Hoffman pool, is 1 mile east of the Feltes pool and west of Prusa West pool.

Aladdin Petroleum Corporation's Bitikofer 1, CNL NE NW 1-20-1w, 5 miles southeast of the Ritz-Canyon pool, McPherson County, flowed an estimated 5,000,000 cubic feet of gas and a good spray of oil to open a new area. Mississippi lime was logged at 2885 feet, and pay zone at 2911-13 feet. A 5-inch liner was run. Oil is estimated at over 100 barrels daily, which may be increased with deepening.

Harrington & Loriaux either opened a new pool or extended production 1¼ miles west in the Lost Springs pool, Marion County, when Belton 1, SEc NE 30-17-4e, filled 2400 feet with oil in 4 hours. Mississippi lime was penetrated to 2415 feet. R. E. Youker et al's McNicol 1, SEc NW 3-17n-4e, ½ mile north of Lost Springs pool, was completed for 150 barrels of oil daily to extend the area. Hole was bottomed at 2341 feet in the Mississippi lime.

Pryor & Lockhart et al's Stratman 1, CW½ NW NW 1-17-10w, wildcat between Ehler and Stratham pool, Ellsworth County, had free oil in the hole from Arbuckle lime at 3283-93 feet and will acidize before testing. North ½ mile of Stratman test, Lario Oil & Gas Company's Mehl 1, CEL NE SE 35-16-10w, filled with water at 3330 feet in Arbuckle lime and was abandoned.

B. B. & M. Oil Company extended Krier pool, Barton County, at Krier "B" 1, 30-16-11w, which flowed 1227 barrels of oil in 8 hours to establish a potential of 3682 barrels. Lansing-Kansas City lime was drilled to 3047 feet and acidized with 4000 gallons. Kruger et al's Tatkenhorst 4, CN½ NW SE 10-9-16w, northwest of Laton pool, Rooks County, filled 500 feet with oil in 24 hours. The pay zone, Lansing-Kansas City at 3207 feet, was treated with 150 gallons of acid.

Wildcat Activity

Cities Service Oil Company staked two wildcat locations: Ray 1, NE NW SE 32-5-20w, Phillips County, is 8 miles southeast of Van Patten pool and west of Bow Creek pool. Hansen 1, SEc NW 15-6-19w, is 10 miles southwest of Faubion pool, Rooks County.

In Barton County, C. L. Carlock staked two tests. Jenke 1, CW½ NW NW 7-18-11w, was rigging up rotary, and Hammer 1, CSL SE NW 35-19-12w, 6 miles west of Ellinwood pool, was a location. Gulf Oil Corporation and Gled Oil Company's Sanders 1, CNL SW SE 30-13-16w, Ellis County, was drilling below surface pipe.

C. L. Carlock et al's Starkey 1, CSL SE SE 21-30-7e, 4 miles southwest of Mahannah area, Cowley County, picked up good oil shows in Mississippi lime at 2815-20 and 2850-55 feet, but will drill to the Arbuckle before testing upper shows.

Wildcat failures were plentiful. W. N. Bartlett's Phannensteil 1, C SE NW 30-13-25w, Trego County, was dry in Arbuckle lime at 4650-84 feet. Saco Oil & Gas Company's Habiger "B" 1, 12-18-10w, Rice County, had only a slight show of oil in Arbuckle lime at 3286 feet, filled with water and was abandoned.

F. G. Holl et al's Wilkens 1, NWc NE 28-18-6w, north of Little River, Rice County, was dry at 3514 feet in Mississippi lime, topped at 3447 feet. Hollow Drilling Company's DeWorff 1, CSL SE NE 25-20-12w, Barton County, was an Arbuckle lime failure at 3380-88 feet. C. L. Sneedy et al's Hook 1, NW SW NW 4-22-10e, Greenwood County, acidized Mississippi lime at 2333-69 feet with 10,000 gallons and later drilled to 2460 feet to be abandoned. This wildcat pumped 5 barrels of oil per day.

Hollow Drilling Company's Smith 3, Section 17-22-3w, east edge of Hollow pool, drilled to 3578 feet in the Simpson where it failed to show, but plugged back to Hunton lime where it pumped 10 barrels daily. Morgan Petroleum Company's Dunn 1, CSL SW NE 2-35-5e, 2½ miles north of Rahn (Bartlesville sand) pool, Cowley County, was abandoned at 3603 feet in Arbuckle lime. Bartlesville sand at 3040-60 feet was dry.

Westgate-Greenland Oil Company's Schlickau 1, C W½ SE SW 8-25-4w, north of Hilger pool, Reno County, topped Chat at 3512 feet and was drilling plugs in semi-saturated lime. McKnab et al's Sherwood 1, NE SE SW 4-35-5e, northwest of Rahn pool, Cowley County, was abandoned at 3048 feet in dry Bartlesville sand.

W. L. Hartman's Falkingham 1, CNL NW SE 22-30-4e, ¾ mile southeast of Rock pool, Cowley County, logged watery Arbuckle lime at 334-36 feet and was abandoned.

W. M. McKnab extended gas production in the Arkansas gas pool ¾ mile west at Coats 1, NEc 18-34-4e. From sand at 762-95 feet, it was completed for 340,000 cubic feet.

Hawkeye Oil Company abandoned Russell 1, CWL NW SE 19-30-5e, south of Daniel pool, Cowley County, in dry Arbuckle lime.

Skelly Oil Company had 3 good producers. McNickle 1, C S½ SW SE 2-24-11w, Stafford County, extended Zenith pool a location north when it rated a bottom-hole potential of 22,844 barrels daily from 3764 feet in Viola lime. Kempe 5, C S½ NW NE 12-11-18w, Ellis County, filled 2300 feet with oil after drilling saturated Arbuckle lime at 3394 feet. Zink 7, C E½ SE SW 32-17-10w, Ellsworth County, pumped 237 barrels of oil in 15 hours. Arbuckle lime at 3222 feet was acidized with 1000 gallons. It extends production ¼-mile east in the Habiger pool.

Lario Oil & Gas Company's Walters "D" 1, CNL NW NE 2-12-18w, ½ mile from Walters pool, Ellis County, topped Simpson at 3527 feet, and Arbuckle lime at 3546-48 feet.

Oklahoma

Dill Pool Extended Into Seminole County

Three new pools in Pottawatomie County were on production tests, while Dill pool was extended from Okfuskee into Seminole County.

Alma Oil Company's Harrington 1, NW SE NW 24-9n-4e, 1¼ miles south of West Earlsboro pool, Pottawatomie County, swabbed 10 barrels hourly. Hunton lime topped at 4210 feet, was perforated and acidized with 1000 gallons. Drilled to 4510 feet in Wilcox sand which showed water, operators perforated with 20 shots at 4217-30 feet and 32 shots at 4185-98 feet. Southwest of this producer, J. W. Meazels Billington 1, SE NE NE 26-9n-4e, drilled to 4508 feet in watery Wilcox sand, topped Hunton lime at 4203 feet and perforated that zone at 4198-4217 feet. After acidizing with 1000 gallons, it swabbed at the rate of 10 barrels hourly. Both pool openers are shut in for tankage.

South of Prague, H L Berkey and Carter Oil Company's Wilson 1, NWc 4-11n-6e, was averaging 60 barrels per day. Senora sand was perforated at 3262-75 feet after the Wilcox failed to show.

Wewoka Standard Oil Company and John Droppleman extended production in the Dill pool across the line into extreme northeast corner of Seminole County at Gahagen 1, NEc 3-11n-8e. Drilled to 4162 feet in Hunton lime, casing was perforated with 30 shots at 3545-60 feet and it flowed at the rate of 50 barrels hourly into the pits. This moves Cromwell sand production ½ mile northwest, although a dry hole separates this producer from the Dill pool in Okfuskee County. The company has approximately 1500 acres surrounding the well and west of the Dill pool.

Southward trend of Lamont pool, Grant County, will be determined at Carter Oil Company et al's Booher 1, CW½ SW SW 16-25n-3w, one location south of a Simpson producer.

Fred Coogan's Kinchen 1 showed possibilities of opening a small pool in SEc 4-9n-25w, 1½ miles northwest of

the Erick gas pool in Western Beckham County. An electric log showed oil at 3686-96 feet. Plug was set at 3706 feet. After bailing and cleaning out, hole was filling at the rate of 125 feet of oil per hour with water decreasing and oil increasing. At 3256 feet, 8¼-inch casing was cemented.

Cumberland Discovery Completed

The Pure Oil Company completed Quinton Little 1 "A," C W½ NE SE 28-5s-7e, Cumberland pool discovery in Marshall County, for 4520 barrels daily through casing with tubing closed. Tulip Creek sand was topped at 4850 feet, McLish at 5103 feet and the well drilled to 5640 feet in that formation without reaching Arbuckle lime. The McLish sand showed water, and hole was then plugged back to 5100 feet where the entire Tulip Creek sand section was perforated. Pure's Little "B" 1, NE SW SE 28-5s-7e, set 10¾-inch casing at 822 feet and was making hole below 840 feet. Thomas "A" 1, SW NE NW 28-5s-7e, was making rat hole. The discovery well is shut in for pipe line outlet, while two other operations in Bryan County were in the preliminary stage. Sinclair Prairie Oil Company displaced other major companies as the largest leaseholder in the Cumberland district with an almost solid block of 15,000 acres between Bochito and Bennington. Magnolia Petroleum Company bought eight leases out of 13 offered in Bryan County by the state. Oklahoma Gas & Electric Company completed its power line to the Cumberland field and is furnishing power to Noble Drilling Company for two of the tests. It is extending the line across the river to supply Olson Drilling Company and The Pure Oil Company's Stewart "A"1, which is spudding on the Bryan County side of the field. Approximately 12 seismograph crews were working out of Ardmore and Durant, shooting in Carter, Love, Marshall, Johnston and Bryan counties. Southwestern Bell Telephone Company was constructing new lines from Madill to Cumberland and the new field.

Johnson-Kemnitz Drilling Company et al's Neff-Godfrey 1, SW SE NE 14-6s-6e, west of Aylesworth, Marshall County, set packers at 3694 and 3838 feet, and the test showed some free oil and water with 20,000 cubic feet of gas. After acidizing with 2000 gallons, the packer gave way and pipe was pulled. Hole filled 300 feet with fluid, ¼ oil. Further testing is expected at 3800 to 4100 feet.

East Broyles pool, Payne County, has its second producer at Blackwell Oil & Gas Company's Scott 1, SW NW SE 24-18n-4e, pumping 156 barrels of oil and 3 percent water in 24 hours. Oswego lime was topped at 2903 feet and drilled to 2985 feet. Pay was acidized with 2000 gallons.

Wildcat Activity

Two Arbuckle tests were started in Tillman County. Kadane Oil Company has cellar at Andrews 1, NWc 35-2s-19w, 1 mile north of West Frederick district. Five miles north of this area, Walter Kline staked Stailey 1, SEc NW 10-2s-19w, a scheduled 6000-foot test.

In the Norman area of Cleveland County, C. E. Hamilton et al staked Meyers 1, SWc NE 22-9n-2w. W. A. Delaney was drilling below surface pipe at Bakhaus 1, SEc NE 12-7n-2w, in the Noble-Bugher area.

Devonian Oil Company set 10-inch surface pipe at 250 feet in Scott 1-A, SEc NE 19-18n-5e, between March and North March pools, Payne County.

Sinclair Prairie Oil Company shot the Simpson zone with 400 quarts at 9205-9370 feet in German 1, SW NW NW 1-6n-13w, 6 miles southeast of Carnegie, Caddo County. While bailing at 4800 feet, over 100 feet of black oil stood on a column of water. Cement plug was drilled out to 9370 feet. Magnolia Petroleum Company's Fiekes 1, C SW SW 31-18n-14w, deep wildcat test in Dewey County killed a high-pressure gas zone at 9475 feet and was deepening.

P. J. McIntyre's Richardson 1, NE SW NW 19-10n-8e, 2 miles west of Cromwell pool, Seminole County, set 7-inch casing at 2196 feet to test an oil show in the Calvin sand at 2020-40 feet. Cromwell sand was dry at 3550-56 feet.

Olson Drilling Company et al's Geis 1, C SW SW 31-18n-14w, a Kingfisher County test, was drilling slowly below 9375 feet in hard dolomite. First Wilcox sand was logged at 9265-74 feet.

Phillips Petroleum Company's wildcat venture in McIntosh County was showing poorly. Blankenship 1, C SW NW 33-10n-13e, topped the Mayes at 3555 feet and was rotating below 3825 feet with a hole full of water.

Southwest of Blakely pool, Okfuskee County, C. A. Yoakum et al's Replogle-Johnson 1-A, NWc NE 11-11n-10e, showed for a Cromwell-sand pool opener. Sand was topped at 3140 feet and drilled to 3177 feet. Two-inch tubing was run to 3173 feet and in the first 24 hours it flowed and swabbed 105 barrels. After being shut in for 3 days, it made another flow of 102 barrels in 14 hours through tubing, with no water.

Helmerich & Payne spudded Lucy Fire Shaker 1, SEc NE 11-24n-3e, a test of the Buffalo Head block in Noble County. Aladdin Petroleum Company et al's Wentz 1, CW½ NE SW 11-22n-2e, northwest of Marathon pool, topped Oswego lime at 3535 feet and was drilling below 4500 feet.

Selby Oil & Gas Company's Abbott 1, SWc NW 11-5s-12w, a Cotton County wildcat southeast of Randlett, topped Canyon lime at 2380 feet and was drilling below 2800 feet with nothing showing.

Helmerich & Payne and Cities Service Oil Company's State B-1, SE NE SE 33-20n-4e, north of the Ingalls pool, Payne County, was drilling below 3500 feet in shale. Pipe was ordered.

Illinois

Wildcatting Featured by Series of Abandonments

Wildcatting in Illinois fared poorly last week with abandonments or near abandonments reported in several areas.

Three miles south of Lake Centralia-Salem field and 1½ miles north of the Dix field, Carter Oil Company's Prather 1, SE NW SW 28-1n-2e, was plugged at 2313 feet. Benoist was topped at 1911 feet, McClosky at 2142 feet, and what was tentatively identified as the St. Louis at 2305 feet. The test had been regarded as a possible link between the two fields.

In the southeast part of White County, not far from the Gallatin County line, Kingwood Oil Company's Paul Martin 1, NW SW NE 13-7s-8e, was shut down for orders at 5200 feet after Devonian was found dry. Casing was on location and an effort may be made to test shows in higher formations. Cypress was topped at 2574 feet, Aux Vases at 2835 feet, and Fredonia at 2902 feet.

In northern Marion County A. M. Lacey's Thurman 1, SE SE SW 15-3n-2e, was abandoned at 2315 feet, through the McClosky. Farther north in the basin, Gulf Refining Company was plugging C. R. Branson 1, NW SE SE 10-10n-5w, Montgomery County, at 2523 feet.

One of the most interesting wildcat tests now active is Carter Oil Company's Vineyard 1, SW SE NE 21-7s-8e, Gallatin County, which was drilling below 2350 feet.

Watched as Possible Pool Opener

A Clay County wildcat which two weeks ago showed for a prospective pool opener when four feet of McClosky saturation was cored at 2446-50 feet, was still being tested. W. C. McBride's Landreth 1, C NW NW NE 27-5n-5e, was acidized with 2500 gallons, but a packer failed to hold and another 1500-gallon treatment was used. The test was being swabbed.

Two outpost tests were spotlighted in the Lake Centralia-Salem area of Marion County. Joe Miller et al's Foster 1, NW SW SW 11-1n-2e, more than a mile from production and which has been drilling intermittently for several months, was nearing 3100 feet and will be carried to the Devonian. It tested a show of St. Louis oil for several weeks before deepening. A. S. Noble had derrick up for Albert Heirs 1, another east outpost, in the NW NW NW 3-1n-2e, also slated to test the Devonian.

The large scale development program of The Texas Company in the pool is resulting in a long list of completions weekly. The company has nearly 100 tests drilling or located. There are now approximately 1952 producers in the field, yielding oil from five horizons.

Development of the Devonian horizon in the townsite part of the Centralia pool, which lies in both Clinton and Marion counties, was nearing completion, and no permits have been issued for wells in the city during the past 12 days. Development is now centered on acreage northwest of the city, where Gulf Refining Company as yet is the only major company active. Last week, the company completed Buehler 16, its second Devonian producer, with an initial of 801 barrels in 18 hours, total depth 2922 feet. The well is in Section 12-1n-1w.

First Trenton test in the field, J. Hal Jones' Lena Haack 1, Lot 3, Block 2,

Kohl and Warner Subdivision, was still attempting to free drill stem, stuck at 3600 feet. It may continue to the Trenton, expected at about 3750 feet. Another Trenton test was underway in the north part of the field: Ames-Hicks' F. B. Brown 1, Lot 12, Block 5, Second Home terrace, was drilling at 3380 feet.

In the new Albion pool of Edwards County, Sam Jarvis' Harry Wick 2-A, SE SE NE 24-2s-10e, at an elevation of 472 feet, was drilling below 2000 feet after coring 25 feet of saturation in Bridgeport sand at 1550-75 feet. All production in the pool at present is from either the Waltersburg or McClosky. Some operators believe that parts of the pool might be productive in the Bridgeport. A Devonian test was also underway in the field. Superior Oil Company's C. Green 1, NW NW SW 19-2s-11e, was drilling at 3300 feet. Superior Oil Company's F. & C. Wood 2, NW SW NW 19-2s-11e, was completed in the Waltersburg at 2380 feet and pumped 315 barrels of fluid initially, of which about 15 percent was water.

Since oil development was resurrected in Illinois early in 1937, there have been 6002 wells completed, as of May 1. During April, 255 wells were successfully completed. The State Geological Survey estimated April production at 12,913,000 barrels, compared with 13,425,000 barrels the previous month. For the first four months of the year, production was estimated at 49,565,000 barrels, compared with 19,783,000 barrels for the same period a year ago. Present 1940 production already equals more than half the total for 1939, and is more than twice the amount produced during all of 1938.

Indiana

Rosiclare May Be Added as Oil Zone in Gilbson County

John W. Chamberlain et al's George B. Shawhan 1, Donation 121-1s-10w, Washington Township, northeastern Gibson County, was showing for a commercial well from the Rosiclare, topped at 1645 feet. The test, in an old Pennsylvania sand pool, was shut down after drilling one foot into the pay.

In the South Griffin field of north Posey County—where operations were underway again after being halted several weeks for high water—Continental Oil Company's H. C. Ford 1, NE NE NW 35-3s-14w, set casing at 2932 feet for a promising McClosky producer. Total depth is 2942 feet. The test offsets the Kleiderer lease to the east.

East of Griffin field production in Gibson County, A. W. Cherry and Barron Kidd's William Dunn 1, NW NE 17-3s-13w, was a failure through the McClosky at 2828 feet. About a mile south of this test, Morgan H. Brown et al located E. M. Sullivan 1, SE NW SW 20-3s-13w.

In Owen County, north of Worthington, Harry Schwarz et al's Everhardt 1, SE SE 21-9n-5w, was abandoned through the Trenton at 2774 feet. Three slightly saturated Trenton breaks were reported.

In the Rockport gas field of Spencer County, L. Steele and A. H. Tydings' Frank 1, NW NW SE 30-7s-6w, was a 4,200,000-cubic-foot gas well completion. Total depth, 13 feet into the Palestine, was 908 feet. Kentucky Natural Gas Company's H. and L. Parsley, south offset to the Rockport discovery lease, SE NE 31-7s-6w, was abandoned at 935 feet.

Blue-lick sulphur water at 1901 feet spoiled chances of McClosky production at Sam Travis-J. R. Raskas' Moyer 1, southeast of Millersburg, Warrick County, SW NW 13-5s-9w. The test is about 1000 feet southeast of red McWilliams' Brammer, light McClosky producer completed last year. The new test may be taken to the St. Louis.

In the Hatfield section of Spencer County, Trio Oil Company located Hodges 1, NW NW NE 5-6s-7w, a Gulf Refining Company farmout just south of Trio's Swallow 1, Waltersburg sand producer. The new test will be cable-tooled.

Northwest of Indianapolis, near Labanon, N. N. Smith et al were spudding the first wildcat test in Boone County, H. A. Marshall 1, northeast of Rosston on Road 29. Smith is reported to have 10,000 acres leased in Union, Worth and Marion townships.

Kentucky

Devonian Test Started Near Narrows Pool, Ohio County

Ohio Oil Company was spudding Alvey Oller 1, Section 13-M-34, for a Devonian test about a mile northwest of Olaton, Ohio County, near shallow sand production in the Narrows pool.

For the first time in several months, no completions were reported in west Kentucky last week. Two first reports, in addition to Ohio Oil Company's new start, were: R. Hal Compton et al's Jackson 1, in the Pleasant Ridge section of Daviess County, which was testing the Jett sand, and J. C. Ellis' Hansford 7, in the Utica field of Daviess County, drilling below 500 feet.

In the Corydon section of Henderson County, Sun Oil Company's Corydon Unit 4 was coring at 2620 feet, with no commercial shows yet encountered in the McClosky. It was lower than other producers in the field.

Meanwhile, a tight hole in Henderson County, near Beals, Ray Cooper et al's George Fulton 1, was reported showing for a producer in the Jones sand at about 1515 feet.

Nowata Water Floods

Phillips Petroleum Company has filed formal application with the Oklahoma Corporation Commission to water flood the described area in Nowata County; NE NW, NW NE, NE SW NE 36-26n-14e, 90 acres; SE SE 25-26n-14e, 40 acres. Ten wells are located on these leases and average daily production is 1 barrel of oil and ¼ barrel of salt water per well. Bartlesville sand is approximately 25 to 30 feet thick and depth to sand is 500 feet.

Brundred Oil Corporation has petitioned permission to initiate a water flood program in the following described area of Nowata County: S½ NW NW, SW NW, NW SW, SE NW, NE SW, NW SE 8-26n-17e; NE NW, E½ NW NW 7-26n-17e, and SE SE SW 6-26n-17e, containing 280 acres.

Forest City Basin

Nebraska Has Its Second Oil Well

Pawnee Royalty Company brought in the second producer in the Falls City area of Nebraska with Buchholz 1, C NW SW 17-1n-16e, flowing between 30 and 45 barrels of oil per day. Hunton lime, topped at 2217 feet, was penetrated to 2232 feet when the hole filled 480 feet with oil in 12 hours and continued to fill. Pay was hard and tight and will be acidized. Structurally, the well checked 59 feet higher than the discovery well, Boice 1, in Richardson County. Located ½ mile south and ¼ mile east of Boice 1, the structure apparently trends in a southeasterly direction. Very little water is showing. Boice 1, CEL N½ NE NE 18-1n-16e, which previously averaged 100 barrels daily from the Hunton lime, filled 2000 feet with water at 2983 feet, but was making hole below 3225 feet in search of Wilcox sand.

In Northwestern Nebraska, G. E. Mitchell et al's Palmer 1, NWc SW 1-33n-50w, Dawes County, had the Sundance formation around 3200 feet, drilled to 3875 feet and suspended operations. Six miles southwest of Plattsmouth, Golden Rod Oil Company's Sporrer 1, SEc 8-11n-13e, Cass County, landed 6-inch pipe at 1100 feet. Uhri Oil Corporation's Stauffer 1, SWc NE 22-1n-13e, Richardson County, cemented 15-inch surface pipe at 550 feet and was shut down. C. L. Price's Bonner 1, SEc 10-23n-49w, Fillmore County, was making hole below 3700 feet with all geological information withheld. California-Nebraska Oil's Stuehn 1, NWc 21-14n-37w, had the Lakota at 3258 feet and shut down for finances at 3281 feet.

In Missouri, Ettington & Holmes' Kapps 1, SWc 31-64n-15w, was shut down at 830 feet in Devonian with nothing showing. Same operators' Clark 1-A, NEc SE 8-63n-14w, topped Hunton lime at 739 feet and shut down at 958 feet.

E. T. Lindsay and Bells-Wells Oil Company's Leblanc 1, C W½ SW NW 35-6s-1w, Cloud County, Kansas, was drilling below 3315 feet without a show. Wamhoff and Lebsack Oil Company's Maduska 1, C SE NE 36-8s-20e, Leavenworth County, Northeastern Kansas, logged Squirrel sand at 975-90 feet for a slight show of oil.

Dan McLaughlin et al's McLeod 1, C NW SW 4-10-20e, Jefferson County, Kansas, encountered oil in Mississippi lime at 1469-72 feet and will acidize prior to testing. Casing was set at 1250 feet. This wildcat is ½ mile from the discovery gasser for that area, which made 8,000,000 cubic feet of gas at 1432 feet. Should the McLeod test fail to show commercially in the Mississippi, it will be deepened for a gasser.

To Organize Michigan A.P.I. Chapter at Mt. Pleasant

An organization meeting to set up a Michigan chapter of the American Petroleum Institute has been called for May 14 in Mt. Pleasant by Marshall R. Joy, resident Cities Service Oil Company manager and member of the Eastern District API advisory board.

West Texas

Ward County Wildcat Flows; Andrews Deep Test Showing

Flowing production was developed by a Ward County wildcat that is believed to be on a reef type of structure, extending along a north-south trend and west of production in the mid-portion of the county. Andrews County entered a bid for a new oil area when a projected deep test encountered sufficient oil saturation in the regular Permian to warrant landing casing for a production test.

Atlantic Refining Company and Standard Oil Company of Texas' University 1, C SW NE Section 12, Block 16, proved the new Ward County area in flowing 30 barrels of oil hourly through drill pipe and temporary surface connections with the packer at 2842 feet. When the stem and tool was pulled it contained 800 feet of oil and 200 feet of water. The source of this water has not been determined. Production is from streaks of saturation in lime, encountered at 2811 feet, with best saturation at 2892-2920 feet. University 1 has an elevation of 2648 feet. Seven-inch pipe was cemented last midweek at 2828 feet. This strike is 2¼ miles west of oil production, with a dry hole indicating a saddle between, while it is 3 miles south of prolific gas production with oil spray developed this year by Magnolia Petroleum Company on a narrow structure.

The Andrews County prospect involves Helmerich & Payne and Atlantic Refining Company's University 1, C NE NE Section 11, Block 11, originally slated to drill to 5500 feet in search of production in the Holt, or lower Middle Permian lime. Seven-inch pipe was scheduled to be set late last week above oil saturation at 4260-73 feet. Top of Yates was called at 2730 feet, with an elevation of 3302 feet, indicating a high structural position when correlated with failures to the south and southwest. Illinois Oil Company's University-Atlantic 1, C NW NW Section 14, Block 12, missed the Holt in drilling to 5611 feet, and is awaiting orders. Yates sand was entered at 2960 feet, or 342 feet above sea level.

Crockett Producer Erratic

Threat of a large-scale drilling program on small tracts adjacent to Soma Oil & Gas Syndicate's Noelke 1, western Crockett County wildcat producer, has been held in abeyance due to erratic production performance. The oil flow was revived to 20 barrels hourly the fore part of last week, while the gas volume remained unchanged at about 25,000,000 feet daily. This well blew out April 12 at 1075 feet and flowed wild for 3¼ days. The flow was killed to cement 7-inch at 976 feet. Performance of the well attracted widespread attention, and a spirited lease play followed. Its nearness to the Yates field, which has experienced underground seepage due to faulty casing seats of prolific shallow wells, has been given consideration by some operators in foregoing opportunities to acquire leases.

Continental Oil Company et al's J. S. Todd 3, ¼ mile east of the unit group's Crinoidal lime discovery in Crockett County, was drilling plugs from 7-inch casing at 5739 feet. Top of Crinoidal was recorded at 5735 feet, or 3214 feet subsea, being 99 feet lower than the producer. Saturated lime was logged at 5749-54 feet. Pete N. Wiggins, Jr., trustee for a group of companies and individuals that control 15,000 acres immediately west and north of the discovery tract, has assigned control to Amerada Petroleum Corporation. The latter is to call a meeting of participants shortly to institute development.

In excess of 100 tons of mud was being prepared late last week to proceed with the killing of Atlantic Refining Company's Riley 6-B, inside test for the Seminole field, Gaines County, which blew out May 4 at 5129 feet while extracting drill pipe to run casing. Fed by gas from the Yates sand and the Permian, the well increased its yield to 33,000,000 feet daily last midweek. The spray of oil is estimated at 450 barrels daily. The main oil zone has not been tapped. Seminole field is steadily expanding in drilling operations. Production is being advanced to the southeast toward the townsite. Magnolia Petroleum Company and Atlantic Refining Company, joint owners of 640-acre tracts, started 5 new tests the past week, including H. & J. 1-221, west offset to Champlin & Bass, Inc.'s Austin-Standard 1, southeast outpost to Amerada Petroleum Corporation's Mann 2, C SE NE Section 220, gauged 224 barrels natural through ½-inch choke in 6 hours from pay at 5210 feet.

Cities Service Oil Company sold its two producing leases in the Payton field, centering upon the Pecos-Ward County line, to Ja-Chel Oil Company for $50,000 cash, with ⅛ over-riding royalty until the wells produce less than 10 barrels daily each, then the interest changes to 1/16 royalty. The deal involves the Dorr and Brandenburg tracts, with 6 wells in the 2100-foot sandy-lime.

Stonewall County Discovery Flows 280 Barrels Oil

Stonewall County gained a new oil pool when Shell Oil Company's T. K. Smith 1, NWc SW H&TC Section 143, Block 1, 8 miles southeast of Aspermont, flowed 280 barrels of 39-gravity oil natural in 24 hours from saturated lime at 6015-28 feet. Production is from Mississippian lime, topped at 6007 feet, with an elevation of 1767 feet, and is the deepest in West Central Texas. It is credited with being the first Mississippian strike for the district, as the formation is generally absent due to the Pennsylvanian overlying the Ordovician. Nearest production from the Mississippian is found in South Young County.

Shell Oil Company's discovery will be killed to lower 5 3/16-inch pipe from 5841 feet to the top of the lime and cement. Last water horizon was logged at 5805-13 feet. Location for the test was made on geophysical and subsurface information. The block was core-drilled to depths ranging from 800 to 1000 feet, and electrical formation survey was made of each test. Top of Canyon was called at 3625 feet and Palo Pinto member at 4700 feet, while first Strawn was reported at 5151 feet. These zones were the original objective, and each showed small amount of free oil with water. The Palo Pinto zone has yielded 2 small wells near the 5100-foot level in the Carlisle pool, western Stonewall County.

S. B. Roberts et al's M. S. Pardue 1, outpost for the southern Haskell County pool uncovered last February by K. B. Nowels et al, abandoned in sulphur water at 3396½ feet with no shows in the Palo Pinto lime, topped at 3381 feet with an elevation of 1495 feet. The lime marker is 20 feet lower than the discovery.

Northwestern Ector County recorded a semi-wildcat producer when M. A. Grisham et al's Cowden 1 swabbed 5 barrels of oil and 2 barrels of drilling fluid and acid residue hourly after treating at 4516 feet with 5000 gallons of acid. It was plugged back from 6090 feet after failing to produce from the Holt zone, encountered near the 5200-foot level.

Barnsdall Oil Company's Blakeney 1, situated on the northwest edge of the North Cowden field, was abandoned at 5220 feet, having failed to respond to acid treatment of the Holt lime zone at 5175-5214 feet.

Pipe-line proration was scheduled to be lifted in the Wasson field the past week as result of the Texas Railroad Commission lowering the allowable from 34,088 to 31,500 barrels daily, effective May 5. Restricted runs have been applied since February 15 by the two largest buyers because of allowable being in excess of outlet.

Booster Station Increases Goldsmith Field Output

Gulf Refining Company has completed a new booster station in the Goldsmith field, second largest producing area in West Texas, thereby increasing its capacity 8000 barrels to a maximum of 29,000 barrels daily. Deliveries are routed via a 17-mile double 6-inch system to the south end of Ector County, where connection is made with its 10-inch carrier. The new Goldsmith station is equipped with 2 units of motor-driven centrifugal pumps, replacing a steam plant.

Gulf Increasing Line Capacity in North Texas

Two main-line booster stations are being erected by Gulf Refining Company near Henrietta and Decatur on its North Texas-Fort Worth 6-inch carrier to boost the capacity from 10,000 to 14,000 barrels daily. These new stations, which are being equipped with 3 units each of gas engines and plunger pumps, will be completed by May 15. The line handles oil from North Texas, and also about 3500 barrels daily that enters the system at Burkburnett station from southern Oklahoma.

Kansas Gas Allowables

Gas allowables for three fields have been fixed by the Kansas Corporation Commission for May. Lyons field was set at 170,500,000 cubic feet; Cunningham at 413,000,000 cubic feet, and Otis at 375,000,000 cubic feet.

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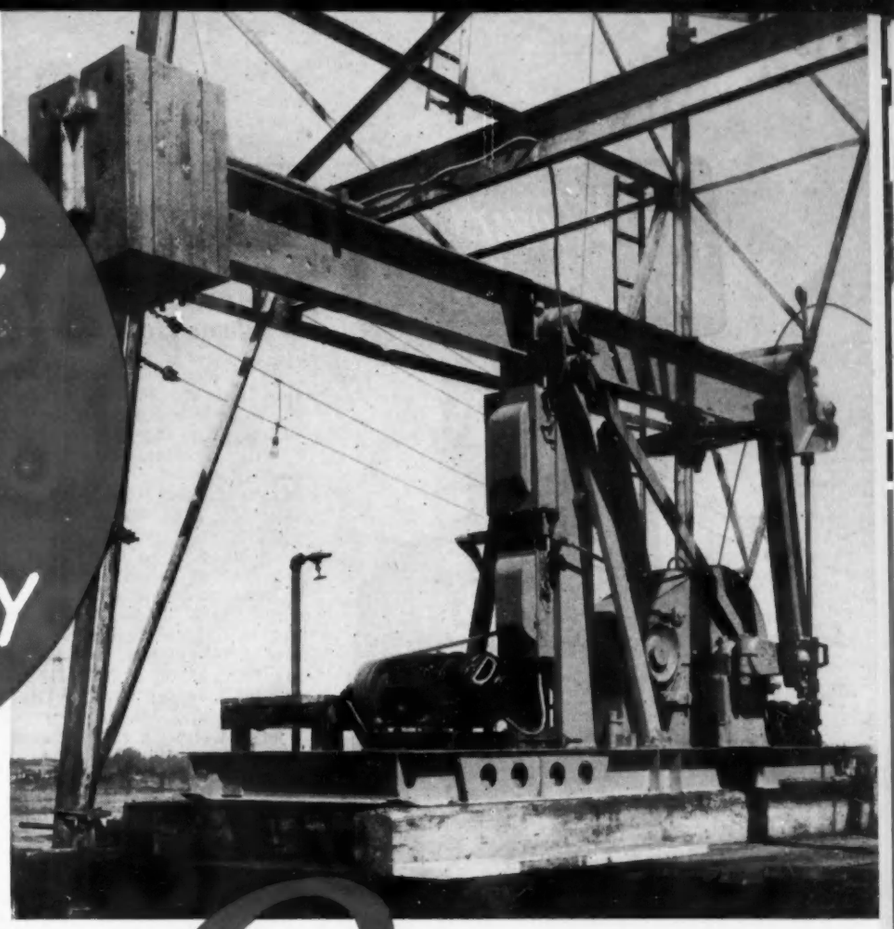

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North Texas

Clay and Montague Deep Wildcats Hold Interest

Wildcats in Clay and Montague counties that are seeking production from the deep-lime horizons held the interest of operators the past week. In the latter county, Ramsey Petroleum Corporation and Stanolind Oil & Gas Company's Magee 1, southeast edge of Montague townsite, provided a disappointment in yielding salt water when tester was used at 6264-76 feet after recovering 6½ feet of oil-saturated conglomerate in core pulled at 6263-76 feet in Bend, topped at 5770 feet. An earlier drill-stem test at 6114-33 feet filled stem with 60 feet of oil-cut mud and 190 feet of drilling fluid in 35 minutes. Heavy investments in leases and royalty have been made around Magee 1.

Clay County's most closely followed wildcat is Staley Oil Company and W. B. Omohundro's Percifield 1, SEc Block 37, T. J. Belcher Survey, 4 miles southeast of the Halsell 4800-foot pool, with oil saturation in hard sand, topped at 5260 feet. This zone was cored to 5276 feet, and a drill-stem test may be made before deepening. Top of Ranger lime of Canyon series and the K-M-A lime (Strawn) were called at 1980 feet and 3610 feet, respectively.

Amerada Petroleum Corporation's Goodpasture 1, northwestern Wilbarger County wildcat on the Doans prospect, was drilling shale and lime at 5705 feet. No shows have been recorded since the well flowed oil through drill pipe from Strawn saturation at 4407-22 feet, and previously in the Canyon.

Walter Gant et al's Vogtsberger 1, northeastern Archer County wildcat, cemented 7-inch pipe at 4651 feet to try for production in Strawn saturation passed up at 4659-4758 feet in drilling to 5335 feet in Ellenburger, topped at 5245 feet. This test was previously credited with having missed the latter and penetrated the Cambrian, but the call proved false as the formation proved to be broken Bend conglomerate, entered at 5118 feet.

Nominal oil saturation found in the Ellenburger dolomite by Sinclair Prairie Oil Company's 2 tests at Bonita, eastern Montague County, are to be tested through casing. David Doty 1, west offset to the company's 5249-foot Bend lime discovery, cemented 7-inch pipe on top of Ellenburger at 5820 feet, with the hole bottomed at 6025 feet. A. P. Howard 2, south offset to the discovery, logged top of the dolomite marker at 5807 feet, or 25 feet higher on structure, and cemented 7-inch on top of first saturation at 5813 feet, with the hole bottomed at 5852 feet. It is credited with 19-foot section of porous lime. Formation tester at 5813-52 feet yielded 60 feet of oil-cut drilling mud. If either prove dry in the Ellenburger, the pipe will be perforated by stages opposite oil saturation passed up in the Lower Bend, topped at 5175 feet and 5196 feet, respectively. Both are likely to make oil producers. Magnolia Petroleum Company's Gilbert 1, northeast outpost, was drilling at 4030 feet.

Ramsey Petroleum Corporation et al's Loring 1, ½ mile south of production in the Nocona deep area, was temporarily abandoned at 6988 feet in Simpson, topped at 6532 feet. Heavier rig may be moved in later to continue to the Ellenberger. This outpost revealed an exceedingly sharp dip in the structure to the south, having logged top of Bend, deepest producing geological formation in the field, at 5698 feet, or 537 feet low. Sinclair Prairie Oil Company is rigging up to drill Lena Benton 1, NWc of 121.3-acre tract, T. R. Jackson Survey, A-394, 1¾ miles east by north of the field with the Nocona townsite between. Drilling obligation was assumed in purchasing the lease. The company retained leases adjacent to its G. Whaley 1, BBB&C Ry. Section 16, 2 miles east of Nocona, although it was abandoned last July in Ellenburger at 5512-71 feet without testing oil saturation in Bend, topped at 5165 feet, or structurally level with producers on the west side of town. Information on the Bend section since it recorded its first production last December has caused Whaley 1 and also Bridwell Oil Company's Reynolds 1, SWc E. T. Ry. Section 9, northeast of Nocona, to be reinstated as potential Bend producers. Both are due to be cleaned out and cased for production tests if Benton 1 makes a producer from the Bend.

Montague Active

Progress reports on Montague County wildcats are followed by an abnormally large number of operators due to the bulk of the county being held under lease. Walter Gant and Continental Oil Company's Brown 1, lowest structurally of all active tests, was awaiting additional acid treatment with 500 feet of oil and 100 feet of acid residue in the hole. It has been treated with 31,000 gallons by stages in Bend saturation at 6077-94 feet, having plugged off Mississippian, 410 feet of Simpson and Ellenburger at 7288-7341 feet. Harvey-Drilling Company and Sinclair Prairie Oil Company's Threadgill 1, 3 miles west by north of Stoneburg, was drilling at 3190 feet. British-American Oil Producing Company's Martin 1, ⅝ mile north of Omohundro et al's discovery producer in Bend at 5704 feet, was drilling at 4710 feet.

Fourteen geophysical crews are conducing surveys for majors in and adjacent to the Fort Worth syncline. More crews are due to be moved into the district, although lease trading has subsided somewhat due to virtually all desirable acreage being taken. All purchasers of checkerboard tracts and blocks are confronted with title problems that will require months.

Shell Oil Company's Davis 1, south offset to the Strawn horizon discovery of the Burns-Browning pool, Clay County, eliminated the lowest known producing zone in the district when the Ellenburger proved dry at 5840-6014 feet. It failed to make a producer in the regular Strawn pay at 4400 feet last summer, suspending operations at 5100 feet. The finding of deeper oil zones in the district induced the company to deepen the test early this year. The bend series, topped at 5264 feet, yielded water at 5482-5501 feet.

Plugback operations are underway on

Magnolia Petroleum Company's Minnie Thom 3, second Ellenburger oil producer for the K-M-A field, after flowing 54 barrels oil and 178 barrels of salt water during the first 19 hours. Production is from saturation at 4419-23 feet, with top of Ellenburger placed at 4415 feet. It is 1⅝ miles southeast of the discovery, and 87 feet low on the deep marker. Open hole below 5-inch casing seat at 4415 feet has been cemented, and the cement will be drilled out to top of pay with machine. Hanlon & Buchanan's Fassett-Tuttle 10-E, Section 3, SA&MG Survey, situated in the northeast portion of the field, proved dry in Ellenburger at 4630-5096 feet, and has plugged back for completion in the 4100-foot Strawn.

Texas Panhandle

Sherman County Test Finds Granite Unexpectedly High

The Ordovician horizon encountered by a semi-wildcat in the north portion of the Texas Panhandle was cut short by the presence of granite at a higher level than generally anticipated. Indian Territory Illuminating Oil Company's C. S. Bryant 1-a, C NW¼ T&NO Section 369, Block I-T, Sherman County, found the shallowest Ordovician in the district in logging Simpson at 4350-4450 feet followed by Ellenburger to 5125 feet. Solid granite was drilled from the latter depth to 5138 feet. No shows were encountered in either of the Ordovician zones, although production test made prior to plugging back to 4100 feet indicated a flow of 8,000,000 feet of dry gas daily from the Permian below 9⅝-inch casing seat at 3052 feet. Water accompanying the gas was from near sea level at 3638 feet, and will be plugged off.

The Sherman County project is on a strike between oil and gas in Moore County and prolific gas district from the same geological horizon in Oklahoma Panhandle. Comparatively few Ordovician tests have been made in the Texas Panhandle, although it is a potential source of production. Information derived from Bryant 1-a is likely to encourage deep prospecting between the two panhandles. Phillips Petroleum Company's J. C. Wilson 2, northeastern Moore County, encountered greater thickness in the Pennsylvanian and Simpson beds in drilling to 8013 feet, where it was halted in Ellenburger limestone. Nominal oil saturation in granite wash, identified as Pennsylvanian age, at 5489-5577 feet proved dry on drill-stem test.

Suspend May 1 Order For Panhandle Area

The order fixing a plan of proration and spacing for wells in the Texas Panhandle, which was to have become effective May 1, has been suspended indefinitely by the Texas Railroad Commission. The old method of spacing and allocation remains in effect.

Panhandle Gas Hearing

The Texas Railroad Commission has scheduled a hearing for May 16 to consider exempting certain wells in the Panhandle from gas proration.

East Texas

Two Lower Trinity Tests Active in Rusk County

Rusk County has two active wildcats that are slated to explore the Lower Trinity. In northeast portion of the county, Whittington et al's Kangerga 1, Ignacio Castro Survey, logged top of Pecan Chalk at 2109 feet with an elevation of 390 feet and was drilling at 2320 feet. J. S. Harrold et al's Alford 1, 2½ miles southeast of Henderson, was making new hole below 6802 feet after cementing a short protection string of pipe. It was carried to the latter depth by Nivla Oil Corporation and abandoned in August, 1937, after Lower Glen Rose porosity at 6495-6527 feet proved dry. Nearby lease owners have contributed toward a 7500-foot test.

Roger Lacy's Fee 1, third test for the deep gas-distillate pool on the east flank of the Gregg County portion of the East Texas field, was drilling lime and shale at 7130 feet with the Pettit zone due near this level.

Sun Oil Company's Sanders 1, ¾ mile south of production in the Chapel Hill oil and gas pool, Smith County, logged top of Georgetown lime at 4409 feet and halted at 4460 feet to run 9-inch pipe. Its Everhart 1, second test for the north portion of the Long structure, was drilling at 7005 feet.

In Eastern Kaufman County, Tom Shaw et al's Wynne 1, deep test for Cedarvale faulted structure, was drilling at 5270 feet.

Texas Permits

Permits for drilling 318 new wells in Texas were approved last week by the Texas Railroad Commission, 16 less than were allowed the week before.

Four permits were granted in the East Texas field, including two in Smith, one in Rusk and one in Upshur County. From the remaining section of the East Central Texas area, 11 locations were reported. Southwest Texas led the state with 107 permits, including 20 in Guadalupe, 14 in Duval and 12 in Jim Wells County. Gulf Coast operators listed 34 locations.

The commission approved permits for drilling 58 additional wells in North Texas, with 17 in Wichita and 15 in Archer County, and 24 locations were approved in the Panhandle.

Operators in West Texas reported 48 new locations, including 16 in Ector and 15 in Yoakum County, while 32 permits were granted in West Central Texas, with 11 in Callahan County.

Raise Anzac-Morris Allowable

The allowable for the Anzac-Morris field, Coleman County, has been increased to supply a local demand from 60 to 150 barrels per day on May 3.

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Southwest Texas

Showings in Laguna Madre Indicate Another Gulf Field

Fifth submerged field for the South Texas Gulf Coast was considered to have been opened as Humble Oil & Refining Company's State 1-D, in Tract 30, of Laguna Madre, found an oil sand at 6779 feet, which showed sufficient saturation to indicate a commercial well. The Nueces County wildcat was still coring in sand below 6800 feet as the week ended. Location is one mile east of the Flour Bluff field, and is considered cut off from that field by a fault of 250 feet or more displacement. The 6700-foot sand is apparently the same one producing in the Flour Bluff at 6520 feet.

Skelly Oil Company's State 1, Tract 385, and in Laguna de los Olmos, showed for a field discovery in the Frio at 7455-63 feet. It is coring at 8110 feet.

Among the other submerged producing areas are Bird Islands in Kleberg County, Flour Bluff and East White Point in Nueces County. At this time, Sinclair Prairie Oil Company and W. R. R. Oil Company are carrying on a drilling program on the off shore of Nueces Bay, completing in the 5650-foot East White Point pay.

Richardson Petroleum Corporation apparently has a new field north of the town of Robstown in Nueces County where Studer 1 is said to be flowing 226 barrels of fluid per day through ¼-inch choke under 300 pounds working pressure after casing was perforated at 5195-5207½ feet, showing 98 percent 36.8-gravity oil and the remainder water. Hole had been drilled to 7525 feet.

Studer 1 is in Lots 4, 5 and 6, Block 17-B, Pauls subdivision of the Driscoll Ranch, a Shell Oil Company farmout. The well is nearly two miles east of Shield Oil Company's discovery of the Robstown pool.

The rapidly expanding Wade City district of Jim Wells County gained an important extension in Jack W. Calvert et al's Spoetzl 1, 2000 feet due north of the discovery well and the same distance north of any production in the pool. Drilled on an Amerada Petroleum Company farmout, the well found the Bierdstadt sand at 4810-14 feet and flowed pipe line oil on a 15-minute drill-stem test. At the end of 10 minutes, the pressure was 72 pounds, but at the close, it had dropped to 58 pounds. When the tool was shut, the string was full of 36.7-gravity crude. Completion was underway late in the week.

The above extension brings offsets by Calvert and Arkansas Fuel Oil Company on other tracts. Atlantic Refining Company, Gilcrease Oil Company, H. R. Smith, Inc., and several others are in line for immediate development assured by the new producer.

About 1½ miles southeast of the same field and in Jim Wells County, Henshaw Brothers and Atlantic Refining Company are continuing flow tests in Pauline Blashke 1. The well is considered to have opened a new field. Finding Bierstadt sand at 5088-5103 feet, the hole was drilled to 5603 feet, then tested at the upper level. Perforations were made at 5100-03 feet and the well flowed 120 barrels of 31.8-gravity oil plus 15 percent water through 7/64-inch choke under 900 pounds tubing and 2025 pounds casing pressures. Mid-Continent Petroleum Corporation has started a well one mile south, and H. H. Howell has started another the same distance north.

One mile north of the Fagan field in Refugio County, Norsworthy Production Company's Holeman 1, Riley Survey, blew out while drilling at 2260 feet. It ran wild several hours, but bridged and the hole was cemented and abandoned.

Texas Gulf Producing Company has set casing at 6000 feet in Kester 1, Creamor Survey in Victoria County, on the Bloomington structure. The well will test an oil sand at 5880-88 feet, where drill-stem test showed oil and salt water. Another sand, indicated by electric log at 5090-5135 feet, also will be tested. The hole is bottomed at 6811 feet.

John Mayo and Commerce Oil Company decided not to test an oil and gas showing around 5000 feet in T. C. Edwards 2, Nira Survey, seven miles north of McFaddin field in Victoria County. It has been abandoned at 6264 feet.

Renwar Oil Corporation perforated at 5750-62 feet and was completing B. A. Phillipi, westermost outpost to the West Ranch field of Jackson County. On the basis of a drill-stem test, the well should make a producer. It is 2 miles southwest of the nearest 5700-foot producers in the field, they being near Vanderbilt. It also is an extension of 2000 feet southwest in the 5500-foot pay. The well found oil sands at 5586-96 feet and 5752-59 feet. The outpost was drilled on a Shell Oil Company farmout.

Two New Gas Fields Are Opened in Mirando District

Government Wells Oil Company's E. C. Lundell, Survey No. 364, six miles northwest of Freer in Duval County, flowed at the rate of 13,800,000 cubic feet of gas and sprayed 23 barrels of 21.6-gravity oil per day through open 2-inch tubing. The well is in the Cole sand at 1347-59½ feet, pipe landed atop the pay. A new test has been commenced as a 660-foot east offset in an effort to develop crude production.

In Webb County, W. C. McBride, Inc., was completing a gas well, which may spray some oil, in the Mirando sand at 2525-39 feet. The well is Pedro Leal 2, SW NE Section 461, 8 miles north of Bruni. This test showed gas in the upper part and salt water in the lower portion of the sand. The 3000-foot contract was completed before a production test was attempted. Gorman-Yoakum Drilling Company has the contract.

Sun Oil Company's M. Garcia 1, Section 407, and 2½ miles east of the Fitzsimmons pool, Duval County, was awaiting orders after testing 4400 feet of salt water from the Yegua sand. Perforations were made at 4900-10 feet with 60 shots. The well had shown for a producer with no water when the first drill-stem test was made on the entire sand section at 4901-16 feet. A bad cement job may be responsible for the water intrusion.

Taylor Refining Company et al's E. A. Parr 1, 3 miles northwest of the Muralla field and in Section 298, was still testing in the Yegua sand at 5480-5483 feet, making salt water, gas and a slight show of oil under 1440 pounds working pressure. It is to be tested later in the Pettus sand at 4668-94 feet, where drill-stem tests proved encouraging.

Colorado County Wilcox Test Reportedly Has Oil Showing

Although no definite details are being released, it is reliably reported that Shell Oil Company is preparing to test oil and gas showings in its project on the Sheridan prospect in Colorado County. The hole is below 8100 feet, having supposedly encountered a series of sands. The last marker reported was Crockett at 5895 feet. This would place the present level well in the Wilcox zone.

The wildcat is Plow Realty Company 1, Obed K. Winn survey, 3 miles southeast of Sheridan. It is on a structure mapped as a high relief.

In Bee County, Union Producing Company plugged back from 8990 feet in G. A. Ray 56, and completed a producer in the Pettus sand; perforations at 3923-52 feet. The well had been abandoned as a Wilcox prospect when the drill pipe stuck at the lower level.

Edwin M. Jones' George West 1-A, 2½ miles northwest of Three Rivers, and in Live Oak County, was waiting on cement after squeezing perforations at 7647-57 feet. It developed salt water at this level. Other holes below this depth to 9500 feet also resulted in salt water. The top of the Wilcox zone was called at 7426 feet.

Shallow Guadalupe County Area to Have Drilling Activity

Widened two miles to the northeast by a 15-barrel pumping producer, Elm Creek field, Guadalupe County, is to see an active and immediate development of its 800-foot Navarro sand. Two more outpost wells to the field were in completion stage, one between the new producer and the main field, while the other is a still farther outpost.

P. G. Rouse, using a new type of portable drilling equipment, was completing Albert E. Lenz, Isham Survey, as a 3500-foot northeast extension to the main pool. Ben L. Robertson et al's Otto Diekow et al 1, nearly two miles northeast of the pool and on trend with the Rouse test, has been finished on pump from sand at 835-48 feet. It is rated at 15 barrels per day. Approximately ¼ mile farther northeast and in the Cortinos Survey, P. G. Rouse's Lenz 1 was in the 800-foot sand and completing. It appears to be a producer of similar proportions to the others in the pool.

In an effort to expand the Riddle pool, Ogden and Riddle are testing L. M. Riddle 6 after an acid treatment. The Bastrop County wildcat is 6000 feet northeast of the main producing area. It topped Dale limestone at 2022 feet, but was carried to 2245 feet in the Austin chalk.

Texas Gulf Coast

Fisher's Reef Test Prepares Production Test in Oil Sand

April activity comparable with that of 1939 brought Texas Gulf Coast completions for the first four months of 1940 to within 16 percent of last year's total. During the month, 102 wells were completed against 103 completions in April, 1939. Strong on May 1, the number of rigs in operation was 11 percent greater than a year ago.

A possible third new field for the district and further success on a selected group of torsion-balance prospects was seen in Standard Oil Company of Texas-Salt Dome Oil Corporation's State 61, Tract 54, in Trinity Bay, about 4 miles off the Chambers County shore, 7 miles northeast of Cedar Point and 11 miles southwest of Anahuac, on Fisher's Reef prospect. The wildcat cored oil sand at 8992-9028 feet as preparations were made for production test. Perforations were made at the base of the sand with unannounced results. Squeeze cement job and perforations will be made in the sand before the test is attempted. Total depth is 9538 feet, with 7-inch set at 9129 feet. Salt water sands were cored at 7597-7610 feet, oil sand was sampled in the Hackberry zone of the Lower Frio in the last 30 feet of hole. Sidewall samples and electric logs gave favorable indications in a number of zones at 8992-9028 feet, revealing from 2 to 8 percent by volume gas and oil. Discorbis small was found at 6550 feet, Discorbis large at 6730 feet, Heterostegina at 6940 feet, Marginulina round at 7150 feet; Marginulina flat at 7210 feet, and Frio at 7590 feet.

If a well is made it will mark the fourth strike among a group of five gravity-anomaly prospects found by torsion balance surveys made by Salt Dome Oil Corporation several years ago. Of the other four prospects; Caplen, Cedar Point and Cotton Lake have been converted to fields, while Angleton Grove is partially condemned by a dry hole. Operators have a large spread in the immediate area, while Humble Oil & Refining Company, Gulf Oil Corporation and Tide Water Associated Oil Company have holdings several sections removed.

Texas producing depth records were shattered by Glenn McCarthy's Andrau 1, 1½-mile northeast extension to Chocolate Bavou, Brazoria County, which came in flowing 15 barrels of 50-gravity distillate and brackish water hourly through ¼-inch choke from perforations at 11,406-412 feet and 11,427-430 feet. Working pressure varied from 3200 to 4000 pounds. Latest reports credit the well with 158 barrels of distillate and 142 barrels of brackish water daily. Operators are rearranging connections to reduce pressure and gas/oil ratio. Same operators Munson 1, wildcat in the Carter Survey, Bailey's Prairie area, Brazoria County, was drilling below 10,000 feet in shale.

East Bernard Test to Run Choke

H. C. Cockburn was preparing to run bottom-hole choke in Leveridge Estate 1, discovery on East Bernard prospect, Wharton County, in an attempt to cut gas flow, which is 4,500,000 cubic feet daily. The well was making 20 barrels of 55-gravity distillate hourly through ⅛-inch choke. Fluid production has declined sharply since the well was brought in, while pressure has increased to 3300 pounds. Considerable trouble was experienced with frozen connections, but operator elected to set bottom hole choke immediately rather than use heaters. This gas distillate field is the second new field for the district this year, and also furnishes a new sand as flow is from perforations at 8074-89 feet in broken sands in the Cook Mountain member of the Claiborne series.

Harris County wildcats were active. Joyce Richardson-Christian-Carpenter Drilling Company's A. H. Marks 1, north of Addicks in the Killam-Ogburn area, made drill-stem test at 6858-80 feet, and recovered gas and salt water. It was drilling toward contract depth of 7500 feet, after which upper horizons will be tested. Same operators spudded E. Marks 1, wildcat in the Ogburn Survey. W. M. Hobson's Highland Farms 1, west of Highlands, was drilling and reaming below 6290 feet. Hobson was also moving in materials for a northeast North Houston field extension attempt in the Charleston Gardens subdivision of the Green Survey. The outpost test is a Gulf Oil Corporation farmout to which that company, Union Producing Company and Texas Gulf Producing Company have contributed. It will be drilled on a seismic closure against a fault which cuts the Aldine prospect and the southern portion of the North Houston-Fairbanks area. Bunte et al's wildcat at Aldine, abandoned some time ago, was drilled on the same fault and had strong shows in the Yegua. The latest test is 1¾ miles east of Kirby Petroleum Company's Hillerbrenner production. Martin Thompson has contracted the Hobson test. H. M. Naylor Oil Company's Hempil 1, northeast outpost in the North Thompson field, set casing for a production test. It reportedly topped Vicksburg lower than wells to the west, and showed a thinner section.

Gang's Flecher Lumber Co. 1, wildcat 2 miles southwest of Genoa being drilled by Dick Schwab, Christie & Dunnam, Hammill & Smith, and Jack Frazier, was drilling below 2500 feet after delayed by stuck drill pipe. Christian-Carpenter Drilling Company was moving in materials to drill Anderson 1 in the Cypress area of Harris County. H. T. Driscoll's Williams 1, north of South Houston, was trying for completion in sand at 4700-75 feet.

In the Needville area, Fort Bend County, Tide Water Associated Oil Company was coring below 7865 feet in shale in Armstrong 1, deep test east of Boling and southwest of Needville. This well attempted to blow out at 7788 feet, but was controlled by mud conditioning. Walter L. Goldston is moving in materials for Kulcak 1, 6 miles from Tide Water Associated Oil Company's test and a mile west of his Hackstedt 1, which was abandoned last week at 5326 feet.

In Matagorda County, Deep Rock Oil Corporation's Petruchia 1 was drilling

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in shale below 10,125 feet. This wildcat, which is said to have an excellent chance of production, is in the J. Dempsey Survey. Stanolind Oil & Gas Company's General American Life 1, Wadsworth area wildcat, was preparing to drill after freeing stuck drill pipe at 9619 feet. Protection string has been set at 8001 feet. The Texas Company's Tyler 1, Freeman George Survey, was drilling below 9195 feet in sand and shale. Barnsdall Oil Company's Stoddard 1, in the Buckeye area, Matagorda County, was drilling at 9580 feet in shale.

D. B. McDaniel's Baldwin 1, Montgomery County, perforated at 9490-9525 feet, ran tubing and swabbed, but found no oil nor gas.

Humble Oil & Refining Company has spudded State 1-246, wildcat test in Galveston Bay. Sun Oil Company's Jackson 2, in the Willow Slough field, Chambers County, was abandoned at 8645 feet. The company is digging pits for Barrow 3 in the same field. Humble Oil & Refining Company spudded Barrow 1, wildcat southeast of South Cotton Lake field, also in Chambers County. Sun Oil Company was still fishing in Smith 1, northern extension attempt in the Seabreeze field.

May Boost Allowables in Texas Gulf Coast Fields

The Texas Railroad Commission last week had prepared orders to increase allowables for the Conroe, Longhorn, Plymouth and other fields in the Gulf Coast area. One commissioner had signed the orders and applicants for the increases were attempting to obtain another signature.

The move was a surprise since Commissioner Ernest Thompson said last week that an increase in the price of crude was likely if production is held within estimates of the United States Bureau of Mines for the remainder of the summer. Thompson expressed the opinion that there was a genuine shortage of crude in some districts which would lead to an increase of as much as 15 cents in the price.

Commissioner Jerry Sadler declared he planned to sign none of the increase orders, which would indicate that, if they are granted, Commissioners L. C. Smith and Thompson will approve them.

Louisiana Gulf Coast

Testing New Sand for Bancroft; Activity High

April activity in the Louisiana Gulf Coast was double that of March and February as aggressive drilling campaigns of major and independent operators resulted in 103 completions. This is in marked contrast to the 38 completions of April, 1939, and also to the 68 and 53 completions made in February and March, respectively, of this year. For the first four months of 1940, completions totaled 319 against 169 for the same period in 1939, or an 89 percent increase. There was a slight decrease in the number of active rigs reported May 1, although uncompleted operations were still 22 percent greater than a year ago.

A new deep producing horizon for Bancroft field appeared certain as Republic Production Company, discoverers of the field, recovered 10 stands of pipe-line oil under 270 pounds pressure in a 15-minute drill-stem test in Lutcher-Moore Lumber Company 11.

Production is from bottom at 7525 feet, while other production in this field is from 7320 feet. Five and one-half inch pipe has been set on bottom and operators were trying for completion. Several surrounding tests have gone to the deeper Wilcox without success. The current outpost attempt is 600 feet northeast of production. The same sand that operators are now testing was found in the company's Lutcher-Moore 1, but produced only gas and a small quantity of distillate.

Hope for an extension and possible new pay for the Point Au Fer field, Terrebonne Parish, was deferred as Barnsdall Oil Company's Nelson Development Company 1, Section 2-21s-11e, stuck drill pipe at 9110 feet and shut down. Bottom is at 11,831 feet in salt water sand.

Brisk royalty trading in the South Erath area of Vermilion Parish was taking place as Strake Petroleum Corporation's Caldwell 1, a mile north of the discovery, shut down at 1100 feet after considerable mechanical difficulty. The trading was attributed to lease expirations and a recent test on the discovery well, The Texas Company's Buras Levee Board 7, which yielded 70 barrels of pipe-line oil daily from 11,388 feet. East of this well, G. H. Vaughn's Bouillon 1 was abandoned at 11,935 feet, checking 250 feet lower on structure than the discovery.

Shallow Sand for Lafitte

A new shallow sand for the Lafitte field, Jefferson Parish, was found by The Texas Company's Louisiana Land & Exploration Company 15, which flowed 210 barrels of oil daily from 4800 feet through ⅛-inch choke. In the same parish, two new wildcat locations were announced: Shell Oil Company staked State 1, Section 27-20s-24e, in the Bay Des Ilettes area, while Vendome Petroleum Company made location for Whitney-Coulon 1, Section 22-15s-23e, in the Crown Point area.

Magnolia Petroleum Company will drill Benoit 1, Section 5-12s-2w, in an attempt to extend the West Gueydan field, Vermilion Parish, south. This company completed a southeast extension for 150 barrels daily through perforations in the 6800-foot sand.

Amerada Petroleum Corporation and Louisiana Land & Exploration Company extended the Raceland field, La Fourche Parish, east by completing South Coast 2 for 570 barrels of 36-gravity oil in 15 hours through ¼-inch choke. Tubing pressure was 340 pounds and gas/oil ratio 650/1. This is the largest producer for the field which now has six wells flowing about 1000 barrels daily.

Three wildcats were nearing critical depths in the same parish. Cockrell's La Fourche Land Company 1, Section 22-18s-22w, Bay Brusle area has cased and perforated, and will attempt drill-stem test below 10,000 feet. In the Lake Boeuf district, Gulf Refining Company's Bowie Lumber Company 1-B, Section 69-15s-18e, was drilling in shale at 11,997 feet, while Humble Oil & Refining Company's Caldwell Sugars 1, in the North Thibodeaux area, was drilling at 11,132 feet after setting 9⅝-inch casing at 10,921 feet. The parish also registered three first reports. Amerada Petroleum Corporation was driving piling in Bayou Des Allemands for Gheen Realty Company 4, Section 56-15s-20e. McMurray Production Company had rig up for Orgeron 1, Golden Meadows outpost in Section 12-9s-22e, while Markley and Mohawk Oil Company were drilling in shale at 150 feet in Duson Heirs 2, Section 100-17s-20e, a Valentine field extension test.

In Iberville Parish, Falcon-Seaboard Drilling Company was coring at 7530 feet in Folse 1, Samstown area wildcat, Section 42-11s-13e, after which drill-stem test will be made. Results on drill-stem tests of upper formations were not released. Shell Oil Company announced location for Forest Home 1, Section 2-11s-12e, a White Castle extension attempt in Iberville Parish.

Superior Oil Company is continuing its search for production around the flanks of old proven domes by locating on the south flank of Bayou Bouillon dome in St. Martin Parish, Section 25-9s-8e. The field now produces from the shallow Miocene.

The California Company's Delta Minerals 1, discovery in the Stella field, Plaquemines Parish, flowed 300 barrels of fluid daily through ¼-inch choke on latest potential test. Fluid was 40 percent salt water and sediment. Operators have cut and pulled pipe and were reworking the well.

In Beauregard Parish, Loffland Brothers et al's Long Bell Lumber Company 1, Section 24-5s-11w, Anita area wildcat, was drilling in shale at 9796 feet. Atlantic Refining Company has started its second well at Neale, where the company recently opened a field with production from the Wilcox. The new test is Spiers 1, Section 26-3s-11n.

Pan American Production & Transport Company opened a new sand in La Place field, St. John Parish, with Godchaux 1, which flowed 51 barrels of 56-gravity distillate daily through 28/64-inch surface choke and ½-inch choke set at 3000 feet. Tubing pressure was 3275 pounds, with a gas/oil ratio of 52,000/1.

Union Sulphur Company is following its recent discovery of deep production on the flank of the old Sulphur field, Calcasieu Parish, with location for Fee 868. Location is north of Fee 867, deep discovery which made 337 barrels daily from 6313-30 feet.

Louisiana Permits

Twenty-four drilling permits were authorized last week by the Louisiana Conservation Commission of which 7 were in North Louisiana divided among the following parishes: Caddo, 4; La-Salle, 2; and Webster, 1. The 17 in South Louisiana were in the following parishes: Acadia, 1; Cameron, 1; East Baton Rouge, 6; Evangeline, 1; Iberia, 1; LaFourche, 3; St. Charles, 1; and St. Mary, 3.

North Louisiana

Caddo Parish Wildcat Checking 40 Feet Lower

Although no new wells were completed last week in the shallow Olla oil field, LaSalle Parish, a gauge was secured on the third Wilcox-sand producer and four operations in the field were testing. One new location was made.

Along the same trend adjacent to the Angelina-Caldwell flexure, J. B. White et al, Dallas, who assembled an 8500-acre tract, made location for a 3000-foot Wilcox sand wildcat in Franklin Parish, A. N. Bailey 1, SW SE 1-11n-6e.

L. I. Davis' Williams 1, NW NW 14-15n-15w, Caddo Parish, Glen Rose wildcat test was drilling at 4534 feet after checking 40 feet lower on anhydrite contact than W. J. Hunter's N. B. Stoer 1, NE NE 10-15n-15w, which showed gas-distillate in Glen Rose but was not a commercial well.

Ohio Oil Company's G. W. Taylor 15, Account 1, SE SE 15-23n-8w, proposed 10,000-foot test for the shallow Haynesville field, Claiborne Parish, was drilling below 2456 feet.

The shallow Pine Island field, Caddo Parish, most active North Louisiana area, accounted for 7 of the 11 oil wells last week, and also accounted for 8 new locations.

One new oil well was added in the 3000-foot horizon at Sligo, Bossier Parish, two in the Zwolle field, Sabine Parish, and one at Olla. The Morehouse Parish part of the Monroe gas field accounted for a small gasser.

Arkansas

North Outpost May Define Atlanta, Columbia County

Possibly defining to the north the Atlanta field, Columbia County, which produces oil from the Smackover lime at 8100-8200 feet, J. K. Mahoney's Emma Riley 3, C SE SW 11-18-19, one location outside production, cored lime with a salty taste at 8195-8205 feet. Drilled at 8215 feet, operators planned to run electric log at 8225 feet. With elevation of 202 feet, this test recovered 6 feet, of which the first 2 feet was hard dense lime, the next 2 feet hard dense oolitic lime with a salty taste, and the last 2 feet hard dense lime with salty taste.

Two wells, both operations of Tide Water Associated Oil Company and Seaboard Oil Corporation, were successfully completed at Atlanta, both in Section 14-18-19. The same operators were rigging for two other tests in the field, and Grady Vaughn was moving in rig for another operation. The only active operation in the field except Vaughn's Mahoney 1, C NW NW 13-18-19, east edge test, was re-completed successfully for a third time, shutting off all salt water. Latest gauge showed ten barrels of oil per hour on 10/64-inch choke with casing pressure of 1400 pounds and tubing pressure of 450 pounds. Previously, it had shown equal amounts of oil and salt water.

Standard Oil Company of Louisiana's Smackover lime wildcat test in Miller County, Sturgis 1, NE SW 1-17-27, after topping anhydrite at 8948 feet (elevation 346 feet) which was considered satisfactory, ran into misfortune when drill pipe lodged at 2650 feet. Bottom is at 8984 feet.

Atlantic Refining Company's deep wildcat in LaFayette County, Bodcaw Lumber Company 1, C NE SW was drilling at 7520 feet, after a core at 7420-40 feet showed recovery of 18 feet of medium-grained porous sand that was salty throughout. The Lewisville-Stamps field in this county recorded one completion, a dry hole.

Four drilling permits were authorized last week by the Arkansas Oil & Gas Commission, as follows: Columbia County—Barnsdall Oil Company's Russ McLendon 1, C SW SW 5-19-18; Tidewater Associated Oil Company and Seaboard Oil Company's J. M. Talley 1, C SE NW 14-18-19; LaFayette County—J. & J. Oil Corporation's J. E. Barmes 1, W½ NE 4-16-24; Union County—Marine Oil Company's Thompson B-5, NEc SE SW 3-18-13.

Mississippi

Dry Hole Defines Tinsley Dome to the West

Six new locations were made last week in the Tinsley Dome field, Yazoo County, where 2 oil wells were completed and one test abandoned to de-

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fine production to the west. All new locations were requisite offsets, 4 by Union Producing Company and one each by Edgar Johnston and Hassie Hunt.

There were two new wildcat locations: Lionel A. Hawkins' B. W. Humphrey 1, NEc 33-13n-2e, Holmes County, near the village of Ebenezer, and Gulf Refining Company's Cason 1, C NE 2-21n-2w, Tallahatchie County, an Eutaw-sand wildcat. Five wildcat tests were abandoned.

Union Producing Company's Ross 1, NW NE 14-10n-3w, was abandoned at 5160 feet after a 20-foot core at 5140-60 feet showed only sand and shale. It defined production of Tinsley Dome on the west.

On the east edge of the field, Union Producing Company's Cesana 1, NW SW 18-10n-2w, in a core at 4708-28 feet showed oil sand and lime, logged Woodruff sand at 4701-66 feet and set 7-inch casing at 4829 feet. Bottom is 4833 feet in shale. In the north end of the field, the same company's J. M. Twiner 1, NWc 1-10n-3w, logged Woodruff sand at 4842-52 feet and set 7-inch casing at 4929 feet, 3 feet off bottom which is in shale. Hassie Hunt's A. G. Johnson 3, NW NE 14-10n-3w, which after topping chalk at 4350 feet and missing the Woodruff sand, topped Eutaw (Blossom) at 4485 feet, was swabbing at 5556 feet after missing the Stevens sand.

Deepest of the 5 wildcat tests abandoned was J. S. Wheeless, Columbian Life Insurance Company 1, NE NE 19-1n-3w, Copiah County, carried to chalk at 8005 feet. Electric log was run. Other abandonments were in Clarke, Holmes, Madison and Sharkey counties.

Leasing

Joining recently in the leasing campaign in Neshoba County were O. G. Collins, of Shreveport, who is leasing around Section 11-9n-10e; Speed and associates, who have taken 5000 acres in the lower part of the same township and S. Brannon, of Shreveport, who is leasing in 2n-10e. Carter Oil Company is leasing in the northwest corner of Clay County and the northeast part of Chickasaw County, where James A. Burnham, of Mattoon, Illinois, is also active. J. P. Evans, of Shreveport, secured 740 acres from S. J. Peeler, 2 miles northeast of Vaiden, Carroll County, near center of a 21,000-acre block already under lease by Evans in 17n-5e, 18n-5e, 17n-6e and 18n-6e. The new acreage carries a drilling obligation to start by next October. Gulf Research Development Company has sent a 22-man seismograph crew to West Point, Northeast Mississippi.

Union Producing Company went over parted casing and set 163 feet of 12½-inch casing after the 9-inch pipe parted around 130 feet in McCorvey 1, SE SW 20-9n-2w, deep wildcat prospect on the Hatchetigbee Anticline, Choctaw County, Alabama. Total depth is now 9110 feet, The test was drilled to 7520 feet two years ago by Joe Modisette.

H. D. Easton, Jr., of Amory, Mississippi, has recorded leases on 41,000 acres of leases on the Beaver Creek Anticline in Marengo County, Western Alabama.

Rocky Mountain Fields

Lance Creek Test Establishes 3840-Barrel Initial Flow

Lance Creek, Wyoming's most active oil field, had an exceptionally large completion last week in the southwestern sector. Minnelusa Oil Corporation's Mackinnie-Thompson 10, NWc NW NE 7-35n-65w, just inside proved limits, flowed 3840 barrels initial for the field's largest completion this year and third largest completion to date. Production is from 5210-58 feet. Though an inside location, the large initial throws favorable light on the southwest side of the field toward possible extension testing. Two other completions were made in the field.

Lance Creek had two new locations. Argo Oil Corporation was building rig for Elliott 13-A, CSE NE NW 5-35n-65w, and The Ohio Oil Company was rigging up rotary for Elizabeth Lamb-Account 2's well 16, CNW NE NE 5-35n-65w. Despite the suspension of an ambitious drilling campaign to the Sundance on the east end of the Lance Creek field, work in the Niobrara County section continues to hold up well. Work on the east end was suspended when the government instigated its suit to lay claim to title of some 2000 acres of land under oil placer claims. It is expected that it will be several months before hearings are given on any of the claims. Litigants, both the operating companies holding lease to the claims and the federal government, are scouring the country for witnesses who worked in the field in 1918 building up their cases as to validation work or the absence of it.

Mackinnie Oil & Drilling Company was spudding with portable rotary Union Pacific-Horne 2, NW NW SW 22-22n-78w, on the recently proved Horne Valley Gas Structure, Carbon County, Central Wyoming. The test is a west offset to Martin & Gaylord's discovery, which completed for 7,000,000 cubic feet of gas daily under 325 pounds pressure from the Muddy sand at 780-805 feet last December. The Mackinnie test will drill through the Sundance.

Shannon Discovery at Cole Creek

Shannon sand discovery, Cole Creek field, Natrona County, Central Wyoming, General Petroleum Corporation's 1-21-G, CNW NW NW 21-35n-77w, has torn down rotary rig and erected pumping derrick and was ready to go on a 10-day production test. The well had swabbed better than 20 barrels per hour, and after being shut in, it headed up and made flows of better than 50 barrels per hour. It is estimated good for upwards of 600 barrels per day from Shannon at 4530-70 feet with the 7-inch casing perforated. The well had plugged back from 8050 feet where it had made 50 barrels of oil and 50 barrels of water daily. The field's discovery, ¾ mile southeast, had been completed in the Dakota-Lakota sands.

The Continental Oil Company resumed drilling McGrath 1, CNW SW 15-34n-78w, wildcat test of the North Geary structure, Natrona County, 6 miles southwest of Cole Creek. Drilling is in the red beds below 7500 feet, and the test will go down to the Tensleep. It may back up later and test at around 2500 feet where a show of gas was reported.

East ¾-mile of the nearest production in the Salt Creek field, Lewis Gebhardt et al were cementing 12½-inch surface string in Government 1, NW NE SE 10-39n-78w, Natrona County.

In the west central Wyoming district, Sinclair Wyoming Oil Company was making good progress in Unit 14, NW SW NE 7-26n-89w, ¼-mile east extension test to deep Tensleep production in the Wertz field, Carbon County. The well was spudded-in early last week and was drilling at 500 feet with heavy rotary equipment. The Wertz field, Tensleep sand discovery of 1937, proved a surprise in 1939 when wells were deepened to the base of the sand with production boosts ranging from 2000 to 5000 barrels per day. The company's Unit 12, CSE NW 23-32n-55w, 3/8-mile east extension test of the Sand Draw gas field, Fremont County, Wyoming, was rigging-up rotary.

Frannie Test Drilling

Rapid drilling was reported in Minnelusa Oil Corporation's Roney 1, SW SW NW 24-58n-98w, north extension test of Frannie field, Park County, North Wyoming, which was being rotary-drilled below 2578 feet. Also in Park County, Oregon Basin field, Yale Petroleum Corporation's Frisby 2-A, CNW SE NW 32-52n-100w, was waiting on cement to set around 7-inch production string at 3426 feet on top of 5 feet of Embar saturation. The company has spotted two more Oregon Basin locations to drill immediately on completion of Roney 1.

In the LaBarge field, Sublette County, Southwest Wyoming, some 24 shallow cable-tool wells are scheduled for completion this year following completion of an excellent producer two miles north of production. North LaBarge Oil Company, discoverer of the north production, last week got underway in Government 3, SE SE NE 28-27n-113w, which spudded and was waiting on cement to set around 10¾-inch surface string at 80 feet. The company was preparing to deepen Government 1, NE SE NE 28-27n-113w, which completed in October for 63 barrels daily at 992 feet to second sand at around 1020 feet. The Texas Company was drilling below 310 feet in Government 1-E, W½ SW NW 27-27n-113w, while Marvel Oil Company's Government 1-H, CEL NE SE 28-27n-113w, was drilling below 700 feet.

Michigan

Overisel-Heath Well Flows 50 Barrels Hour for Record

Flank drilling to old pools in both the shallow southwest and basin areas of Michigan continued last week to account for the bulk of drilling activity.

Fletcher & Lemans' Van Sweden 1, Section 4-3n-14w, Heath Township, Allegan County, flowed 50 barrels an hour natural from Traverse at 1459 feet to set a new record potential for the Overisel-Heath pool.

The state's two active deep tests were testing oil showings. C. L. Maguire, Inc.'s Clark 1, Section 32-16n-2w, War-

ren Township, Midland County, logged an oil show at 4713-15 feet in a sand break between the Monroe lime and Sylvania sand. Carter Lease, Inc.'s Fee 6, Section 18-13n-1w, Porter Township, Midland County, shut down for orders at 4350 feet, after logging an oil show through a hole full of water. Exact formation of the show was not immediately determined, but probably is the Monroe.

Latest efforts to establish an oil field in Barry County failed when two wildcats junked. One of them, Fox & Flemings' Owens 1, Section 35-2n-9w, Hope Township, was a mile southeast of two small mile-apart pumpers in Section 27-2n-9w. Twin Drilling Company and Deep Rock Oil Company's Henderson 1, Section 7-8n-15w, Crockery Township wildcat, Ottawa County, was junked as non-commercial. Test drilled the Traverse, Dundee and Monroe lime before abandoning at 2235 feet.

Belvidere Oil Company and Joe Drurys' Huyck 1, Section 31-12n-6w, Home Township wildcat, Montcalm County, was abandoned at 3499½ feet in the Upper Monroe. Test had logged a show of oil at 3497 feet but went back into water when deepened a foot.

California

Fresno County Wildcat Shows Gas and Distillate

Outstanding development in California prospecting operations last week was indication of a new producing area in the Cantua Creek region of Fresno County, 9 miles north of the Coalinga field. The Texas Company's Southern Pacific 1, Section 23-17-15, bottomed in shale at 10,116 feet, flowed at the rate of 3,000,000 cubic feet of wet gas during 35-minute formation test with a small amount of condensate and mud recovered in drill pipe. Well was plugged back to 9330 feet, cleaned out to 9355 feet with 222 feet of liner cemented at 9330 feet. Test was in Eocene sand at 9345-53 feet. Casing has been set. Findings indicate either the edge of a producing sand, or an accumulation similar to that found by Western Gulf Oil Company's S.P.L. No. 3 in this area which failed to make a commercial producer.

General Petroleum Corporation recovered 2800 feet of mud and salt water when a formation tester was run on K.P.C. 1, wildcat in Section 16-26-22, Kern County, Semitropic area. The test was at 3455 feet. Possibility of finding deep production at Semitropic, which is a producing gas field on the floor of the San Joaquin valley, has held attention since 1937. K.P.C. 1 is expected to be carried to considerable depth for a thorough test of oil production possibilities.

Superior Oil Company has staked locations for two additional northwestern outpost tests in the Rio Bravo field: Roe 2 in Section 27-28-25, and Rudnick 2 in Section 28-28-25.

A prospect well, Continental Oil Company's Kreyenhagen 1, southeast of Coalinga and west of the northerly tip of Kettleman Hills field, has been staked in Section 4-22-16, Fresno County to test Eocene and Temblor formations.

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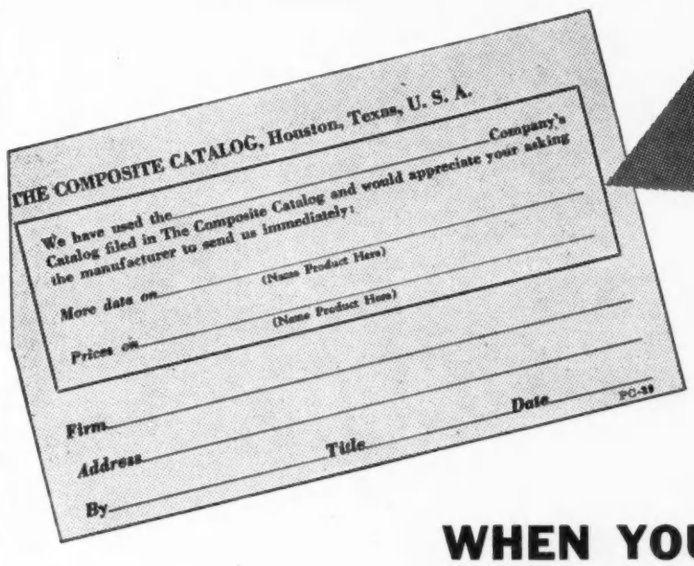
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UNITED STATES WELL COMPLETIONS

Arkansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Atlanta)—		
Tidewater Associated-Seaboard, Beene 1, 14-18-19	225	8165
Murphy et al 1, 14-18-19	200	8177
La Fayette County (Lewisville-Stamps)—		
Erwin & Leach et al, Warren et al C-1, 24-16-24	*	3587
Union County (Nick Springs-Rainbow City)—		
Barnsdall Oil Co., North Central Texas Co. 1, 5-18-14	*	3852

California

Company, Well and Location	Init. Prod. Bbls.	Depth
Fresno County (East Coalinga)—		
Robert S. Lytle, No. 48-18F	2265	7909
Standard, No. 22-19F	1765	8051
No. 33-19F	1911	7800
No. 42-19F	3384	8029
Kern County (Belridge)—		
Belridge Oil Co., No. 1-28	128	8450
Kern County (Coles Levee)—		
Richfield, KCL-C 12-3	648	9790
Kern County (Mount Poso)—		
Vedder Pet. Corp., Lambert 31-2	*	2754
Kern County (McKittrick)—		
Franco-Western Oil Co., No. 18	283	2237
Kern County (Rio Bravo)—		
Superior, Webber 2	1588	11,450
Kern County (Ten Sections)—		
Shell, KCL A-76-29	3837	8240
Kern County (Wasco)—		
Continental, Meyer 1	2789	13,139
Standard, Mushrush 4	3590	13,135
Kings County (Kettleman Hills)—		
Standard, No. 41-27Q	1722	8115
No. 63-27Q	1575	8200
No. 72-27Q	985	8040
No. 85-27Q	844	8325
Los Angeles County (Dominguez)—		
Union, Callendar 76	743	7565
Los Angeles County (Long Beach)—		
Jahns Oil Co., No. 6	75	1180
Los Angeles County (Montebello)—		
Brookline Oil Co., Drake Comm. 1	110	7710
Getty-Pacific Western, Star-Nursery 1	140	7603
Herley-Kelley Oil Operators, Masser 2	150	7711
Nono Oil Co., Formeman 1	220	7710
Los Angeles County (Rosecrans)—		
Royalty Service Corp., Riverside 1	260	9148
Los Angeles County (Wilmington)—		
K.A.K. Oil Co., No. 1	170	3113
Portside Pet., No. 1	57	3624
Royalty Service Corp., Villa-Hall 1	90	3600
Orange County (East Coyote)—		
Sonwell Oil Co., No. 2	200	3307
Ventura County (Piru)—		
Bolsa Chica Oil Corp., Hidden 1	45	3691
Ventura County (Rincon)—		
C.C.M.O. Oil Co., Hobson B-14	35	4400
Ventura County (Ventura Avenue)—		
General Pet. Corp., Bernard 15-A	72	9000
Tulare County (West Tulare Lake Area)—		
Shell, Cohn Estate 6-4	*	11,885

Illinois

Company, Well and Location	Init. Prod. Bbls.	Depth
Champaign County—		
Kerchner et al, Ginter 1, ne fr sw se 2-18n-8e	*	720
Clay County—		
Pure, Thomas 2, n½ se se 13-2n-7E	84	3048
Clinton County—		
Joe Carroll, Hatfield 1, sw nw ne se 12-1n-1w	600	2915
Fairhope Oil Co., Allison 1, se c sw ne 12-1n-1w	1162	2921
Fuller & Reynolds, Kaelin 2, nw c sw se 12-1n-1w	700	2923
W. C. McBride, Allison 9, sw c se ne 12-1n-1w	1680	2926
Osborn, Kaelin 2, sw nw sw se 12-1n-1w	1190	2922
Raynolds, Porter 1, lot 16, blk 1, 12-1n-1w	192	2937
Sappington Oil Co., Moore 1, se nw se se 12-1n-1w	238	2917
Shafer & Lapex, Home Bldg. & Loan 1, lot 11, blk 6, 12-1n-1w	360	2918
Thompson Dr. Co., Chamber of Commerce 1, ne c se 12-1n-1w	384	2920
Three States Oil Co., Dawson 1, lot 15, blk 1, 12-1n-1w	213	2920
Cokin & Manta et al, Coe 1, nw sw se se 13-1n-1w	279	2928
Dixie, Brookschmidt 1, se ne se 13-1n-1w	216	2909
Jones & Jones, Huff 1, lot 2, blk 4, 13-1n-1w	350	2951
Ill-Mid-Continent, Hefter Heirs 1, sw ne 13-1n-1w	201	2936
B. F. Floyd, Miller 1-B, nw ne nw ne 24-1n-1w	10	1376
Santa Fe Pet. Co., Vandeloo 1-D, ne nw ne 8-1n-3w	120	2475
Harry Miller, Feldheimer 1, sw se nw nw 12-3n-3w	*	679
A. W. Gerson, Foster 1, nw c se se 21-3n-4w	*	990
Brown & Gavin, Thole 1, c ne ne 32-3n-3w	*	1164
Edwards County—		
Jarvis Bros. et al, Wicke 1-A, ne se ne 24-2s-10e	240	3135
Fayette County—		
Texas, Wright 6, ce½ nw sw 31-6n-3e	126	1593
Carter, Durbin 22, ne sw sw 4-7n-3e	276	1583
Owen 1, se nw nw 17-7n-3e	282	1574
Huffman 4, se ne nw 12-8n-3e	42	1482
Taylor-Doty 1, nw sw se 12-8n-3e	79	1530
Reed 2, se ne nw 13-8n-8e	114	1603
Mabee Dr. Co., Kepp 4, sw ne sw sw 31-8n-3e	8	1565
Carter, Dial 9, nw se ne 33-8n-3e	564	1588
Dial-Durbin 2, sw ne ne 33-8n-3e	588	1581
Hamilton County—		
Kingwood, Dodd 1, se se nw 6-6s-7e	420	2708
Jefferson County—		
Magnolia, Jones 1, ne ne ne 10-3s-2e	*	4578
Lawrence County—		
W. C. McBride, Crews 1, sw ne sw se 18-4n-10w	*	1440
Marion County—		
Hughes Pet., Delay 1, lot 4, blk 7, 7-1n-1e	420	2929
Ross O&G, Eager 1, lot 6, blk 8, 7-1n-1e	295	2929
Scott-Carey, Fox 1, lot 10, blk D, 18-1n-1e	159	2922
Hawley Oil Co., Becker 1, nw sw sw nw 18-1n-1e	216	2955
Texas, City of Centralia 6, sw se nw sw 4-1n-2e	182	1855
City of Centralia 10, sw c nw sw 4-1n-2e	96	1846
Johnson 27, nw ne se sw 5-1n-2e	81	3449
Richardson 10, nw sw se se 5-1n-2e	462	2070
Richardson 12, sec ne se 5-1n-2e	126	1840
Tate 18, ne sw nw 5-1n-2e	910	1988
Friedrich 16, sw nw ne ne 8-1n-2e	224	2090
Freidrich 17, nw se se ne 8-1n-2e	147	2095
Fyke 9, sw ne ne se 8-1n-23	98	2105
Bryant 16, se nw nw sw 9-1n-2e	126	2091
Deaner, Burge 5, nec nw ne 18-1n 2e	452	2081
Pure, McCrackin 5, lot 2, nw 4-1n-8e	47	3100
Kingwood-Bell, Shanafelt 23, ne c ne 20-2n-2e	519	3475
Magnolia, Young 98, sw nw nw sw 21-2n-2e	372	3495
Texas, Corbin 8, sec ne 31-2n-2e	2590	3340
Maxwell 5, nec se ne 31-2n-2e	2800	3340
Wayman 23, swc ne ne 31-2n-2e	1815	3380
Wayman 25, se sw nw ne 31-2n-2e	1800	3365
Williams 17, swc ne se 31-2n-2e	2100	3340
Hays 10, ne se nw nw 32-2n-2e	700	3360
Wayman 28, se sw nw nw 32-2n-2e	1200	3350
Wiser, Weems 12, nw nw nw 33-2n-2e	75	1839

Summary of Drilling Operations in the United States, Week Ended May 11, 1940

	WELLS COMPLETED							*PERMITS FOR NEW WELLS				
	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1940	Total this Date 1939	This Week	Total this Month	Total 1940	Total this Date 1939	Year Total 1939
Alabama	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Arizona	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas	4	2	.....	2	425	73	80	4	8	50	70	223
California	31	29	.....	2	29,681	486	394	31	57	408	379	1,174
Colorado	.....	.....	.....	.....	.....	3	9	.....	.....	.....	.....	.....
Florida	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Georgia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois*	74	63	.....	11	30,475	1,287	1,311	106	182	1,463	.....	893
Indiana	6	2	1	3	160	138	50	.....	.....	.....	.....	.....
Kansas	42	27	.....	15	45,869	609	447	47	87	710	480	1,583
Kentucky	5	3	.....	2	70	92	227	.....	.....	.....	.....	.....
Louisiana	45	37	1	7	7,376	584	357	24	103	590	397	1,444
Michigan	30	15	1	14	3,545	473	443	21	50	450	425	1,419
Mississippi	8	2	.....	6	825	62	1	.....	.....	.....	.....	.....
Missouri	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	.....	.....
Montana	4	4	.....	.....	565	52	40	.....	.....	.....	.....	.....
Nebraska	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico*	13	13	.....	.....	7,404	287	229	26	41	277	.....	293
New York	20	19	.....	1	45	405	177	.....	.....	.....	.....	.....
North Dakota	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ohio	.....	.....	.....	.....	.....	265	290	.....	.....	.....	.....	.....
Oklahoma	54	32	2	20	6,890	819	727	47	82	732	753	2,059
Pennsylvania	60	59	1	.....	73	924	456	.....	.....	.....	.....	.....
South Dakota	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Tennessee	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Texas	225	157	3	65	89,072	3,826	3,611	318	652	4,730	4,007	10,269
Utah	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
West Virginia	.....	.....	.....	.....	.....	194	182	.....	.....	127	.....	718
Wyoming	.....	.....	.....	.....	.....	51	50	.....	.....	.....	.....	.....
Total this week	621	464	9	148	222,475	10,639	9,082	624	1,262	9,537	6,511	20,075
Total last week	574	423	37	114	277,698	10,018	8,628	638	638	8,913	6,052	20,075
Total this year	10,639	7,840	571	2,291	4,099,145	.....	.....	.....	.....	.....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Illinois date from October 15, 1939; New Mexico from August 1, 1939.

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
ILLINOIS *(Continued)*		
Monroe County—		
Dorsey Oil Co., Rose 1, sec 1, 1-1s-10w	•	860
Richland County—		
Cosmopolitan Oil Co., Wattleworth 2, nw sw nw se 26-4n-10e	92	3114
Wabash County—		
Bander, Seibert 1, nw ne ne 4-1n-13w	284	2702
Wolf Bros., Seibert 1, se nw ne 4-1n-13w	175	2731
Lindas, Rose 1, sw c nw sw 14-2s-13w	•	2805
Tide Water, Spencer 4, nw sw sw 17-2s-13w	200	2477
Washington County—		
Magnolia, Benczeyke 1, c se se se 32-3s-2w	•	1652
Liszewki 2, ne ne sw 15-3w	21	1289
Wayne County—		
Pure, Hubbell 5, cw½ ne nw 9-1n-8e	405	3111
Medley 1 ce½ nw ne 24-2n-7e	228	3120
Jarvis Bros. et al, Hazel 1, ne ne nw 22-2n-9e	•	3302
White County—		
New Penn Dev. Co., Williams 1, sw se se nw 28-3s-9e	70	3427
C. D. Neff et al, Buss Hrs. 1, nec ne 28-5s-8e	•	3482
Carter, Pool 4, sw sw se, 24-6s-8e.. Pool 3, nw ne ne 25-6s-8e	270	2532

Indiana

Crawford County—		
Sun, Miller 3, nw se sw 1-7n-12w	155	1876
Hancock County—		
D. D. Chafee, Brock 1, sw ne sw 6-16n-6e	•	1010
Morgan County—		
J. M. Stip, McGraw 1, ne ne sw 19-13n-1w	•	910
Randolph County—		
E. G. Henderson, Warren 1, se ne ne ne 16-2in-15e	5	1167
Spencer County—		
Walter Duncan et al, Miller 1, ne sw ne 31-7s-6w	•	925
Sullivan County—		
Hoosier Public Utility, Remy 209, c se nw 1-9n-9e	¶.58	889

Kansas

Barton County—		
B. B. & M. Oil Co. et al, Esfield 2, cs½ ne se 28-16-11w	3000	3372
Hinkle, Kroutwurst 1, cn½ ne ne 34-16-11w	115	3402
Darby, Bitter 1, cn½ nw ne 5-16-13w	440	3353
Shell, Radenberg 4, nw se nw 3-17-11w	1998	3350
Hollow, Barth 1, csl se ne ne 16-17-11w	•	3318
Stanolind, Soeken 2, cn½ nw sw 5-20-11w	•	3350
Crown, Hull 1, cw½ sw se 6-20-11w	•	3407
Phillips, Petz 3, cw½ nw ne 7-20-11w	370	3340
McMorrow et al, Tonkin 1, swc 4-20-12w	•	3430
Butler County—		
Horn et al, Creek 1, nw se sw 17-29-4e	•	1615
Cowley County—		
Brewer, Curffman 2, nw ne se 28-31-4e	•	3407
Sinclair Prairie, Wallet 12, nw sw se 24-32-4e	•	3043
Ellis County—		
Dickey, Stone 1, cn½ ne sw 4-11-17w	•	3533
Larlo, Cress "C" 5, ce½ se sw 13-11-17w	3000	3380
Dickey, Carmichael "A" 7, cs½ se nw 18-11-17w	3000	3399
Cities Service, Rumsey 14, sw se se 23-11-17w	3000	3510
Darby, Hadley "B" 3, cn½ se nw 13-11-18w	3000	3349
Central Pet. et al, Lynn 1, nec sw 14-11-18w	•	3474
Hall, Oswald "B" 7, ne nw se 11-12-16w	3029	2811
Greenwood County—		
Lewis et al, Heusen 1, sw nw se 12-27-10e	•	2255
Reed et al, Axton 2, cs½ nw ne 17-28-11e	50	1227
McPherson County—		
Sunray, Lindquist 1, cw½ ne nw 29-20-5w	3000	3367
Pratt County—		
Magnolia, Beck 1, cw½ nw nw 12-27-13w	433	4295
Rice County—		
Mission, Habiger 10, nw ne nw 5-18-10w	3000	3239
Harwood, Cramm 4, nw sw se 15-19-9w	243	3242
Skelly, Sledd 3, ne ne sw sw 27-19-9w	1002	3212
Robertson, Barngrover 1, cs½ nw ne 32-19-9w	•	3322
Rooks County—		
Horndendorff, Westhusin 1, ce½ ne ne 14-9-17w	6	3302
Sinclair Prairie, Riddler 1, cs½ ne se 36-10-18w	•	3521
Haynes et al, Becker 1, swc nw 29-14-14w	•	3252
Russell County—		
Central Pet., Foster "B" 16, ce½ nw nw 3-14-15w	1572	3311
Gulf, Mollie 12, csl se nw se 25-15-14w	3000	3326
Coralena, Dumler 6, cel se nw nw 36-15-14w	3000	3320
Shell, Dumler 9, cwl nw ne sw 36-15-14w	3000	3320
Stafford County—		
Cities Service, Smith "B" 3, cw½ sw nw 16-21-11w	•	3530
Trigg et al, Helmers 1, cw½ nw se 2-22-12w	•	3630
Stanolind, Harbeson 8, ce½ ne nw 11-24-11w	3000	3767
Phillips, Tretbar 2, cn½ se nw 12-24-11w	282	3761
Stanolind, McComb 4, ce½ nw sw 14-24-11w	299	3832
Continental, Fair 2, nec sw 12-25-13w	3000	4145
Woodson County—		
Harper, Figge 10, sw nec sw 28-23-14e	15	1667
Aikman et al, Arnold 3, c nw ne 35-23-14e	15	1642

Kentucky

Daviess County—		
Master Oil Co., Richmond 3	25	1212
McClean County—		
W. E. Hupp et al, Smith 2	•	1539
Ohio County—		
Eureka Oil Co., Davidson 5	30	319
Richards Bros., Whittaker 1	•	585
P. P. Murry, Walker 1	15	268

North Louisiana

Bossier Parish (Sligo)—		
Triangle Dr. Co., Skannal C-5, 13-17n-12w	214	3013
Caddo Parish (Pine Island)—		
C. J. Brown, Muslow 2, 5-20n-15w	200	1563
Cooper Oil Co., Stiles B-2, 33-21n-16w	30	1930
Magnolia, Dillon Hrs. 33, 24-21n-15w	30	1690
Sklar Oil Co., Hobbs 1, 21-21n-15w	35	1585
Stanolind, Slattery 14, 21-21n-15w	20	1595
L. O. Gandy, Whatley 1, 12-20n-16w	35	1535
Bobby Manziel, Muslow B-1, 6-20n-15w	250	1570
La Salle Parish (Olla)—		
Placid Oil Co., La. Cent. Lbr. Co. 11, 13-10n-2e	250	2537
Morehouse Parish (Monroe)—		
Southern Carbon Co., Tensas Delta 29, 34-22n-4e	¶2½	2200
Sabine Parish (Zwolle)—		
George L. Pace, Logan Oil Co. 4, 26-10n-13w	10	1981
P. C. Alexander, Peters 1, 30-8n-12w	50	2544

South Louisiana

Baton Rouge—		
Helis, Duplantier 1	227	6502
Charenton—		
De Arman et al, Boudreaux 10	50	913
Lawes Realty 3	•	3002
Pan-American, Ecuer	151	1160
Veeder 25	20	1135
Choctaw—		
Standard La., Wilbert 12	287	5452
East Hackberry—		
Gulf, Erwin 15 (wc)	552	6131
Eola—		
Harry Bass, Ritchie Gro. Co. 1	666	8581
Golden Meadows—		
Bennett, Bruce 1	112	2675
Brown and Woods, State 1	60	2679
Marr & Vaughn, Alerio 1	70	2665
Texas, State-Catfish Lake 7	130	2692
Grand Bay—		
Texas, State-Lookout Pass 1	423	10,252
Grand Lake—		
Superior, State 11	330	8990
Jennings—		
Noble & Baker, Prather 1 (wo)	•	7380
Stanolind, Crowley Oil & Mineral 117	17	7670
Stricker-Pharis, Gulf Fee 1	•	7503
Lafitte—		
Texas, Lafitte 15 (new sand)	212	4805
Lockport—		
Magnolia, Farquhar 7 (wo)	54	6928
Raceland—		
Amerada-La. Ld. & Exp, South Coast 5	861	10,210

[*Continued on next page*]

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United States Well Completions—*Continued*

SOUTH LOUISIANA *(Continued)*

Company, Well and Location	Init. Prod. Bbls.	Depth
Sulphur—		
Union Sulphur, Fee 815 (wo)	2	3015
Tepetate—		
Continental, Vincent 1	*	9015
Venice—		
Tide Water, Buras Levee Board 7	365	10,765
Ville Platte—		
Continental, Coreil 3	318	10,254
Haas 6	140	9103
Opelousas-St. Landry Sec. Co. 1	153	9087
Tate 9	108	10,089
Vidrine 1, tract 14	350	10,236
Danciger, Vidrine 2	443	10,189
West Gueydan—		
Magnolia, Hartwell 1	151	6670
Acadia Parish—		
Continental, Vincent 1, Trilby prospect	*	9015
Humble, Leger 1, Branch area	*	10,000
Vermilion Parish—		
G. H. Vaughn, Vaughn 1	*	11,991

Michigan

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Wiser Oil Co., Immink 1, nw nw ne 3-3n-14w	15	1569
Klein 1, se sw ne 4-3n-14w	275	1473
Howard Fowler, Japin J4, cw½ w½ 3-3n-14w	270	1462
W. Spencer Cook, Scholten 1, ne ne ne 4-3n-14w	*	1578
Fletcher & Lemans, Van Sweden 1, nw ne se 4-3n-14w	1000	1459
Kolvoord 1, nw sw sw 21-3n-14w	*	1463
Bell-Marks, Buskirk 1, se ne sw 24-4n-12w	*	635
McKenna & Mees, Land Bank 1, sw sw nw 5-1n-15w	*	1293
C. W. Cook, Nakken 1, ne nw nw 33-4n-14w	*	847
Land & Lewis, Fleser 2, se nw sw 15-4n-13w	100	1601
Hugh Heinig, Mixluschek 1, nw ne ne 9-3n-11w	*	1139
Barry County—		
Strange O&G Co., Golden 1, nw ne sw 31-3n-7w	*	2135
Fox & Flemings, Owens 1, se se ne 35-2n-9w	*	1835
Isabella County—		
Chartiers Oil Co., Currie 5, se ne sw 5-16n-4w	*	3969
Cities Service, Tice 3, se se ne 29-16n-3w	55	3705
Jackson County—		
A. G. Morency, Brown 1, se sw se 2-4s-2w	*	1557
Kent County—		
Sun, Huyser 1, ne sw nw 12-5n-11w	*	2276
Certain-Teed Prod. Co., Fee 15, se se se 33-7n-12w	275	1796
D. E. Foster, Nardin 3, se nw se 33-7n-12w	80	1850
Rex O&G Co., Pere Marquette 3, ne sw ne 3-6n-12w	750	1760
Montcalm County—		
Belvidere & Drurys, Huyck 1, c n sw sw 31-12n-6w	*	3499
Taggart Brothers, Turner 17, c ne 12-12n-10w	¶6	1125
Ottawa County—		
Twin & Deep Rock, Henderson 1, nw ne nw 7-8n-15w	*	2235
Geo. Kernodle, Bursma 1, se se ne 23-7n-13w	100	1886
Gulf, Rapp 2, ne nw se 23-7n-13w	40	1879
Rapp 3, ne ne sw 23-7n-13w	45	1880
Turner Pet. Corp., White 1, c n sw ne 23-7n-13w	250	1880
Twin Dr. Co., McKay B9, sw sw nw 24-7n-13w	90	1902
Van Buren County—		
Gratiot Oil Oper., Drake 1, se ne sw 21-2s-16w	200	998
R. T. & E. Corp., Bray 2, c s n se 19-4s-13w	*	1230

Mississippi

Company, Well and Location	Init. Prod. Bbls.	Depth
Clarke County (Wildcat)—		
Ark.-Miss Corp., State 1, 16-2n-16e	*	5012
Copiah County (Wildcat)—		
J. S. Wheless, Jr., Columbian Ins. Co. 1, 19-1n-3w	*	8005
Holmes County (Wildcat)—		
Hawkins & Matthews, Ellis 1, 18-14n-4e	*	5007
Madison County (Wildcat)—		
Love Pet. Co., Parkinson Est. 1, 23-9n-1w	*	5316
Sharkey County (Wildcat)—		
Eureka Pet. Co., Cooper 1, 15-14n-6w	*	3742
Yazoo County (Tinsley Dome)—		
Union Prod. Co., Ross 1, 14-10n-3w	*	5160
Partridge 1, 1-10n-3w	375	4937
Woodruff 5, 13-10n-3w	450	4551

Montana

Company, Well and Location	Init. Prod. Bbls.	Depth
Glacier County (Cut Bank)—		
Glacier Prod. Co., Miller 5, csw ne 32-33n-5w	190	2963
Toole County (Kevin-Sunburst)—		
Big West Oil Co., Ellingson 1, nw se sw 14-35n-3w	240	1760
Morton & Shaw, Ellingson 1, se ne nw 23-35n-3w	35	1724
M. E. Toles, Blumberg 1, ne ne ne 32-35n-3w	100	1700

New Mexico

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Bassett & Birney, State 5-B, se nw nw 2-18s-29e	600	2755
Dixon & Yates, Saunders 2-A, nwc ne 12-18s-29e,	1380	2750
Premier Pet. Corp., Beeson 5-F, se sw ne 31-17s-30e	195	2851
Republic Prod. Co., Russell 8, ne sw ne 18-17s-31e	245	3497
Sallee & Yates, Ballard 2-B, se sw nw 1-18s-29e	1080	2717
Lea County (Eunice)—		
Continental, State 3-F-1, lot 9, 1-21s-36e	77	3746
Ohio, State-McDonald 17, ne se ne 13-22s-36e	1048	3760
Lea County (Maljamar)—		
R. W. Fair et al, Baish 4-B, c sw se 22-17s-32e	500	3997
Lea County (Mattix)—		
C. B. King Dr. Co., Toby 1, c nw sw 7-24s-37e	180	3640
Lea County (Penrose)—		
Skelly, Baker 3-B, c nw sw 10-22s-37e	92	3735
Lea County (Skelly)—		
Skelly, Sims 9, c nw sw 34-22s-37e	92	3735
Lea County (Vacuum)—		
Magnolia, State-Bridges 61, c nw se 14-17s-34e	475	4674
Ohio, State-Warn 6, Acct. 2, nw ne sw 6-18s-35e	1440	4690

New York

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegany County—		
Messer Oil Corp., Vosburg farm, Bolivar	5	1271
D. F. Allen et al, Richardson farm, Bolivar	4	1136
Ebenezer Oil Co., Emerson farm, Scio	5	1059
Cretekos & Vossler, Norton farm, Scio	6	1046
Bradley Prod. Corp., Monitor farm, Alma	4	1296
Wm. Taylor Est., Thornton farm, Alma	8	1387
L. H. Thornton et al, O'Connor farm, Alma	4	1276
Hill, Hughes & Keller, Wade farm, Genesee	4	1369
Martin O'Connor Est., O'Connor farm, Genesee	5	1345
Penn-York Nat. Gas Co., Forsythe farm, Independence	*	5042
Water Input Wells		
Utter Oil Co., Richardson farm, Alma	...	1370
R. B. Moore No. 6, Daniels farm, Bolivar	...	1350
Messer Oil Corp., Miles farm, Bolivar	...	1412
N. V. V. Franchot, Reddy farm, Alma	...	1429
Otaquago Oil Corp., Pike farm, Alma	...	1425
Dick Oil Co., Cameron farm, Bolivar	...	1415
Stout & Stout Oil Co., Brandes farm, Wellsville	...	1412
Messer Oil Corp., Courtney Hollow farms, Clarksville	...	1347
Bradley Prod. Corp., Coats farm, Wirt	...	1290
A. G. Shaner Oil Co., Childs farm, Clarksville	...	1280

Oklahoma

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo County—		
Phillips, Garrison 4, nw nw se ne 34-6n-10w	1326	3386
Carter County—		
Jones Oil Co., Dillard 1, se nw sw ne 22-4s-2w (OTD 1515)	4	2140
Shell, Tubbi 29, ne sw nw nw 24-4s-3w (OTD 1115)	24	1230
Tubbi 46, se ne nw nw 24-4s-3w	25	1216
Comanche County—		
Smith, Truitt 7, c w½ se 26-2n-11w	7	221
Creek County—		
Bryan Pet. Co., Ah-Sey 1, ne nw ne 34-14n-7e	104	2652
Shamblin, Roller 2, se se ne ne 13-17n-10e	*	2038
Garfield County—		
Magnolia, Kring 1, c se sw 12-21n-3w	*	5680
Grady County—		
Alma, Rogers 1, cn½ nw se 36-5n-8w (OTD 3515)	*	4100
Grant County—		
Continental, Kretchmar 1, sec ne 28-28n-5w	*	5509
Jackson County—		
Navajo Oil Co., Hensley 6, ne sw nw 10-1n-20w	126	1577
Kiowa County—		
Hipper et al, Hobbs 1, sec nw 35-6n-17w	*	690
Gled Oil Co., et al, Watkins 2, nw sw nw 20-7n-17w	42	1041
Henry et al, Huff 1, swc nw 32-7n-18w	*	1784
Latimer County—		
Le Flore Gas & Elec. Co., James 31, cs½ ne 11-6n-21e	*	2028
Noble County—		
Fain Dr. Co., Guthrie 1, se nw ne sw 31-21n-2w	120	5431
Mid-co, Travis 1, nwc 27-23n-2w	2784	4340
Okfuskee County—		
McMann, Durkee 9, cwl nw ne se 2-10n-11e	10	1692
Doak et al, Douglass 1, sw ne ne 16-10n-11e	390	2882
Wells, Posell "B" 1, nw sw nw 30-10n-12e	*	2719
Titus, Franks 1, swc nw 25-11n-8e	110	3120
Oklahoma County—		
I. T. I. O. Co., Jones 1, nw se sw 1-11n-3w (OTD 6505)	*	4100
Clark et al, Angel 1, se se sw se 34-12n-3w	288	6495
Trigg et al, Hughes 1, nec sw 28-15n-1e	52	4834
Okmulgee County—		
Briscoe et al, Gill 2, nw nw ne nw 1-13n-12e	10	1705
Calahan, Huckaby 1-A, sw swc 3-13n-14e	*	1240
Shock, McKee 1, swc ne 17-14n-11e	110	2388
Tulsa Tubular Co., Waldropp 1, se 3-15n-11e (OTD 1926)	10	2193
Pawnee County—		
Haynes, Elmore 1, ne nw ne 9-20n-9e	*	1525
Brown et al, Shisler 1, nwc se 21-22n-7e	28	2604
Payne County—		
Helmerich & Payne, Slick 1, nw sw se 24-18n-4e	200	3655
Blackwell, Shannon 1, se ne sw 24-18n-4e	*	3118
Gulf, Runningfox 2, ne se ne 5-19n-5e	78	3240
Pontotoc County—		
Delaney, Smith 3, sec 26-2n-6e (OTD 4334)	37	4439
Sinclair Prairie, Vivian 5, sw nw nw 22-2n-7e (OTD 3918)	15	1484
Magnolia, Metropolitan Life 36, se ne sw 27-2n-7e (OTD 4135)	20	4275
Hall, Troup, Moore, Summers 2, swc se 26-5n-4e	50	2610
Superior, Indian 3, sw ne nw 36-5n-4e	320	2626
Scroggins, Fee 1, se nw ne 34-5n-7e	*	1404
Huddleston, Shields 1-A, nw nw ne ne 33-5n-8e	16	705
Pottawatomie County—		
Marko, Inc., Coley 1, c nw sw 14-7n-3e	391	4410
Sinclair Prairie 1, sec 24-7n-4e (OTD 4205)	*	3373
Seminole County—		
Warren-Bradshaw, Harris 1, sec ne 26-7n-5e	*	3378
Johnson-Bowles et al, Fisher 1, swc nw 36-7n-5e	*	3051
Shephard, Scroggins 4, sw nw sw 34-7n-6e	*	2852
Alma, McRoberts 1-A, sec sw 7-9n-7e	138	4045
Amerada et al, Davis 2, nw sw ne 3-10n-5e	33	4658
Stephens County—		
Lundy, Brown 1, nec 23-1n-9w	*	2266
Carl Carter, Parker 2, sw se ne ne 16-1s-5w	4	522
Pace, Fee 18, cwl sw ne nw 28-2s-7w	*	1794
Tulsa County—		
Cook et al, Horner 2, ne sec 14-17n-12e	18	1379
Blankenship et al, Fee 1, se ne nw 2-19n-14e	¶1.25	875
Wagoner County—		
Murphy, Fee 1, nec nw 12-17n-17e	*	600
French Brothers, Hall 2, nw se se 20-18n-17e (OTD 739)	¶0.07	794

Pennsylvania

BRADFORD DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
C. A. Duke Estate, D. C. & B.	5	...
Messer Oil Corp., Redfield	2	...
Duffytown Oil Co., Sullivan	1	...
Tapp, Gallets & Buffington, Trs. fee	4	...
Mathew Lippert et al, Lippert	15	...
Forest Oil Corp.	1	...
Forest Pet. Corp., 2 wells	2	...
Niagara Oil Corp., 3 wells	3	...

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
Bradford Tr. Co., 29 wells	29	...
Grant & Mohan Oil Co., No. 3, Bing 486-7	2	...
George Van Vechten & Son, Farr	3	...
R. E. Hungiville No. 2, Bing 299-300	1	...
Water Input Wells		
Mix Creek Oil Co., fee	...	...
Forest Oil Corp., 2 wells	...	...
Forest Pet. Corp.	...	...
Niagara Oil Corp., 5 wells	...	...
M. L. Doyle, Duke	...	...
Underwood & Moody, Loop	...	...
Pine Run Oil Co., Bing 130-1-2-3-4-6	...	...
MIDDLE DISTRICT		
John H. Glass, Mitchell	½	...
A. E. Kahle et al, Kahle	2	...
Water Input Wells		
Joseph Karl Estate, Lot 106	...	...
BUTLER-ARMSTRONG DISTRICT		
T. W. Phillips Gas & Oil Co., Harry Boyer	¶	...
Edward McKinney, McKinney	2	...

East Texas

Joiner Area—		
P. G. Lake, Maxwell 6 (21.81-ac)	750	3713
M. H. McMurrey et al, Turner 35 (195.63-ac)	1800	3796
Kilgore Area—		
Jas. E. Kemp et al, King 12, blk 138	960	3570
Longview Area—		
Coastal Dev. Co., Flewellen 24 (200-ac)	1300	3685
Flewellen 26 (200-ac)	1200	3667
Anderson County (Long Lake)—		
Hunt Oil Co., Robinson-Hombs 2	¶44½ & 80	5345
Cherokee County (Wildcat)—		
Shell, S. H. Maness 1	*	4788
Franklin County (Talco)—		
Humble, Penn-Humble 18	560	4286
Henderson County (Wildcat)—		
W. R. Manning & Jack Browning, Johnson-Magnolia 1	*	3245
Navarro County (Flag Lake)—		
C. L. Brown et al, W. J. Trammell 1	*	3250
Cass County (Wildcat)—		
E. A. Stiller et al, Glass 1, Wm. Paxton sur	*	4002
Harrison County (Wildcat)—		
Fohs Oil Co., Sypert 1, Hooper sur	*	4559
Marion County (Jefferson Rodessa)—		
Beckett & Key, Perry 1, Chas. Grayson sur	214	6120

West Central Texas

Callahan County—		
W. D. Austin et al, Yarbrough 4	10	328
Hagerty et al, Smartt 1	*	801
J. M. Russell et al, Gray 1	*	480
West Bros. et al, Harp 1	*	395
Woodley Pet. Co., Finley 1	*	505
Coleman County—		
States Oil Corp., Stockard 5	40	3639
Eastland County—		
Teatsorth et al, Marlow 1	*	1620
Jones County—		
W. H. Peckham et al, Brock 9	25	1883
Brock 10	145	1893
Jones County (Wildcats)—		
Humble, Clift 1	*	6020
Iron Mt. Oil Co. et al, Wiley 1	*	4023
Stephens County—		
C. K. West et al, Pierce 2-B	*	4451
Taylor County—		
Tal-Vez Oil Co., Rister 1	*	2461

West Texas

Andrews County (Emma)—		
Sinclair Prairie, University 2-69	496	4330
Andrews County (Means)—		
Humble, Means 79	367	4525
Ector County (Foster)—		
Barnsdall, Witcher 5	615	4180
Continental, Johnson 2-B	728	4287
Schermerhorn Oil Corp., Johnson-Amerada 9	980	4196
Johnson-Amerada 3-C	940	4236
Sinclair Prairie, Johnson 9-A	411	4265
Stanolind, Cowden 38-A	515	4170
Cowden 46-A	206	4130
Ector County (Goldsmith)—		
Gulf, Goldsmith 274	1342	4242
Ector County (Jordan)—		
Cities Service, University 2-C	711	3583
Texas Co., McDonald 3	2152	3700
Ector County (North Cowden-Holt)—		
Barnsdall, Blakeney 1	*	5220
Ector County (North Cowden)—		
Stanolind, Midland Farms 1-B	644	4545
Western-Southern Oil Corp., Smith 1	16	4431
Gaines County (Cedar Lake)—		
Stanolind, Johnson 1	663	4750
Gaines County (Seminole)—		
Magnolia-Atlantic, H. & J. 4-265	811	5314
Osage Dr. Co., Tippett-Ohio 8-A	713	5318
Tippett-Ohio 10-A	508	5345
Hockley County (Slaughter)—		
Awoeb Oil Co. et al, Davis 4	†	3179
Honolulu Oil Corp., Mallet 2-5-52	323	5037
Texas Co., Slaughter 9	1052	4985
Loving County (Wheat)—		
H. W. Martin et al, Wheat-Ramsey 5	172	4252
Motley County (Wildcat)—		
Humble, Matador L&C Co. 2	*	8604
Pecos County (Wildcat)—		
Humble, B. Young 1	*	7430
Pecos County (White-Baker)—		
R. L. Walker et al, White-Baker 1	19	2033
Pecos County (Yates)—		
Ohio, Yates 1-G-8	15	457
Reeves County (Wildcat)—		
T.A.T. Oil Co., U. G. Orendorf 1	*	1901
Scurry County (Sharon)—		
M. Brownfield et al, Wade 1	48	2490
Scurry County—		
Western-Southern Oil Corp., Sorrells 2	81	1811
Upton County (Gulf-McElroy)—		
Gulf, Crier-McElroy 41	2708	2867
Ward County—		
W. N. Agey et al, Sloan-Shell 1	30	2940
Gulf, Estes 132	1790	2689
O'Brien 133	33	2870
Sinclair Prairie, Archenhold 25	330	3020
Texas Co., University 2-E	838	2700
Winkler County (Keystone)—		
M. J. Bashara & Sons, Fee 4	150	3248
Gulf, Keystone 36	497	3435
Yoakum County (Wasson)—		
Anderson-Prichard, Willard - Spearman 5	1739	5157
Argo Oil Corp., Comer 2-C	1579	5165
Continental, Kendrick 4-867	1540	5120
Honolulu Oil Corp., Hovencamp 4-890	834	5045
Humble, Bennett 4	1323	5240
J. W. Murchison et al, Anderson 2-B	567	5230
Oil Dev. Co., Willard 2-765	487	5215
Willard 13-803	1169	5215
Olson Oil Co., Willard 7	1372	5180
Willard 8-A	1048	5205
Shell, Baumgart 12-A	1372	5194
Baumgart 6-E	1361	5194

North Texas

COMPLETIONS

Archer County (Hull-Silk)—		
Chapman & McFarlin, Little 2-A	1560	4410
Little 1-B, sec 2	1632	4375
L. F. Wilson	1008	3767
C. B. Christie et al, White 2	688	4415
Cities Service Oil Co., Wilson 29-C	936	4406
Cochran & Cain, Little 2-B	1056	4405
Ed Cox & Hamon, Little 3	1368	4405
Deep Oil Dev.-R. G. Drl. Co., Little 6	1344	4375
Helmerich-Payne & Blackwell O&G Co., Wilson 12	1224	4371
Helmerich-Payne & Mazda Oil Corp., Finley 3	420	4304
Bert Ligon et al, Little 4-B	1104	4408
Ed. Peterson-E. C. DeMontel, Schildknecht 1	1152	4290
Archer County—		
Cable Oil Co., Thuman 11	8	984
Cato Oil Co., Anderson 6	92	1075
Anderson 7	62	1080
Anderson 9	51	1081
Bert Ligon et al, Little 5-B	47	1375
Panhandle Ref. Co., Green 7-C	66	1141
Shell, Colgan 7	26	1464
Archer County (Wildcats)—		
J. T. Miller et al, L. F. Wilson 1	*	1550
Clay County—		
E. N. Costley et al, McInness 5	20	1090
McInness 6, blk 58	*	1170
Taylor 7-D, blk 42	*	1071
Clay County (Wildcats)—		
Cook & Smith, Hansard 1-A	*	1336
Gorman & Ted Norwood, Taylor 2-A	*	1130
L. H. Haliday et al, J. D. Fleming 1	*	1373
Cooke County—		
Lausen & Dixon, C. J. Fette 1-a	71	1136
Shaw Oil Co., Stark-TCU 3-B	52	1122
Stark-TCU 4-B	46	1144
Cooke County (Walnut Bend)—		
Ed Cox & Hamon, K. Neu-Texaco 13-B	876	4903
Sinclair Prairie, McGeorge 11	602	4977
Jack County—		
Forbess & Rochelle, L. Carter 2	*	465
O. J. Perrin et al, Rhodes 6	768	3141
Three-B Investment Co., Rhodes 2-B	189	3206
Montague County (Bowers-Benton-Holmes)—		
United Prod. Co-Continental, Rex 1	*	3994

[*Continued on next page*]

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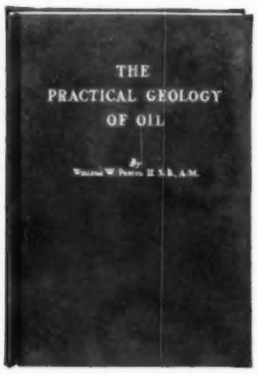

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CONDENSED
TABLE OF CONTENTS

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1. Geological Problems.
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4. Minerals.
5. Rocks.
6. Erosion.
7. Geological Time.
8. Fossils.
9. Sedimentation.
10. The Crust of the Earth.
11. Structural Geology—Folding and Faulting.
12. Concentration of Oil.
13. Unconformities.
14. How Wells Are Drilled.
15. Geology of the Hole.
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United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
NORTH TEXAS *(Continued)*		
Wichita County (K-M-A)—		
T. B. Cochran & Woff Cain, Preston 1-B	424	3988
Consolidated Oil Co., James 12	616	4000
Dalport Oil Co., Munger 3	1152	3873
C. O. Davis et al, Jones 2	612	4100
W. H. Hammon-Hanlon & Buchanan, Fasett-Tuttle 16	520	4015
Kimmell-Lee & Co., J. F. Dove 1	29	4059
W. B. Omohundro et al, Jones 4	600	4074
Tide Water Associated et al, Ferguson 18	848	3862
Chas. Pettit 20	872	3823
Wichita County—		
B. C. E. Dev. Co., Warren 1	35	1475
Deep Oil Dev. Co., Birk 1	•	1750
Geo. Proctor et al, Foster-Allen 52-A	12	1548
Wichita County (Wildcats)—		
C. E. Beavers et al, J. J. Perkins 1	•	1450
Roy I. Carter et al, J. N. George 1	•	1630
Wilbarger County—		
Paradise Oil Co., Waggoner Est. 6-B	203	1566
Young County—		
Bernsen & O'Rourke, Harlan 4	538	2790
W. F. Collins et al, T. F. Harman 1	•	605
Mahler 2	•	615
A. R. Hendricks et al, J. R. Jackson 1	•	1253
Bama T. Meyers et al, Calvin 1	•	640
C. A. Montgomery et al, E. R. Smith 2	•	792
Sams & Watson, Calvin 8	•	601
R. J. Watson et al, Larrimore 4	4	577
Young County (Wildcat)—		
O. L. Carrico et al, Nan Burch 1	•	500

Texas Panhandle

COMPLETIONS

Carson County—		
J. M. Huber Corp., Burnett 12-R	19.8	2442
Texas Co., J. T. Boney 24	330	3160
Gray County—		
Humble, Merten 12	470	3250
Magnolia, J. J. Wall 6	83	3290
Hutchinson County—		
Shell, Harvey Sisters 2-B	415	3040
Skelly, Watkins 2-B	309	2810
Travelers Oil Co., Haile 9-B	752	3028
Moore County—		
Phillips, Beauchamp 1	19.2	3577
Shamrock O&G Corp., Allen 1	19.8	3534
Wheeler County—		
Texas Co., Perkins 1	25	2390

South Texas

CORPUS CHRISTI DISTRICT

Aransas County—		
F. A. Gillespie & Sons, Kidd 1, (McCampbell)	127	7205
Bee County—		
Union Prod. Co., Ray 56 (Pettus)	35	8993
Brooks County—		
Humble, McGill Bros. 63 (Kelsey)	•	4746
McGill Bros. 65 (Kelsey)	•	4785
Hidalgo County—		
Phillips Pet., Salinas 2 (Samfordyce)	325	4325
Jackson County—		
Humble, Toney B-1 (West Ranch)	900	5545
Magnolia, West 67-A (West Ranch)	750	6200
West 72-A (West Ranch)	1250	5593
West 73-A (West Ranch)	1250	5594
W. R. R. Oil Co., State of Texas 2 (West Ranch)	1200	5781
Jim Wells County—		
Rodney DeLange, McNeil 7 (Wade City)	900	4951
Foster Pet. Co., Startz 1 (Ben Bolt)	•	6140
Henshaw Bros. & Atlantic Ref. Co., Blashke 1, (WC) Agua Dulce gr	250	5603
J. E. Johnson, Blowerk 1, (Premont)	30	2361
M. M. Miller, Fee 1, (WC) Case Blanca gr	•	6108
Al Parker, Seeligson et al 1-P (Premont)	35	2384
Rowan & Hope, Adams 3 (Alfred)	500	4727
H. R. Smith et al, Nollkamper 1-A (Wade City)	1000	4928
William H. Spice, Schalbert 2, (WC) Arriba gr	•	5604
Karnes County—		
Luling O. & G. Co., Nilson 1 (WC) Martinez sur	•	2988
Live Oak County—		
Humphries & Harry Hotchkin, Hamilton Bros. 1 (WC) sur 3	•	2138
Moore Dev. Corp., Rosebrock 1 (Oakville)	59	2796
Nueces County—		
Richardson Pet. Co., Rudolph Struder 1 (WC) blk 17-B	500	7500
W. R. R. Oil Co., State of Texas 2 (973) (E. White Point)	500	5641
Refugio County—		
Norsworthy Prod. Co., Holeman 1 (WC) Michael Riley sur	•	2260
Quintana Pet. Co. et al, Williams 21-A (Tomoconnor)	1500	5925
San Patricio County—		
Esves Oil Co., Dimmick 2 (Plymouth)	600	5656
Southern Minerals Corp., Porterfield Est. 3-A (McCampbell)	250	7165
Standard Oil Co. of Kan., Haisley 2 (E. White Point)	500	5679
Victoria County—		
Humble, Welder 1, (WC) sur 9	•	5905
Houston Oil Co., Fagan et al 5 (McFaddin)	350	4413
Luling O. & G. Co., Miller, Jr. 1 (Victoria)	•	3071
John G. Mayo et al, Edwards 2 (WC) D. Nira sur	•	6264

LAREDO DISTRICT

Duval County—		
C. Andrade III, Peters 1, (WC) sur 31	•	2775
Argo Oil Co., Fee-Rodden 1-B (Hoffman)	•	2708
Graham Bros., Graham 1 (Chiltipin)	•	5034
Magnolia, D.C.R.C. 4 (132) (Cedro Hill)	18	1439
Weil 9 (495) (Hoffman)	120	2797
Milam Dr. Co., Peters 2 (Rancho Solo)	60	1890
Sun, Anita de Valaeria 3 (Muralla)	•	4753
Jim Hogg County—		
M. W. Buter & Gordon Girffin et al, Allen 1 (WC) sur 49	•	3660
R. W. Erwin, Jaur Est. 1 (WC) sur 15	•	3510
Humble, King Ranch-Colorado 8 (Colorado)	350	3041
King Ranch-Colorado 9 (Colorado)	350	3039
Magnolia, Merchants Bank (H. B. Zachry) 45 (WC) sec 267	•	3000
McMullen County—		
A. van Desar, Brown 2 (WC) sur 54	•	820
Starr County—		
Clopton & Mitchell, Wardner 7 (S. Ricaby)	•	1865
W. R. Davis Co., Slick Est. A-3 (Rincon)	1000	4278
Slick Est. B-17 (Rincon)	450	4259
Slick Est. B-22 (Rincon)	650	4269
Slick Est. B-24 (Rincon)	500	4327
Magnolia, Juarez 1 (Sun)	650	5185
Sun, Spear B-1 (Sun)	650	4966
Webb County—		
V. G. Schimmel et al, Benavides B-3 (West Cole)	•	2496
Zapata County—		
James P. Nash, Haynes 37-A (Comitas)	30	1110

SAN ANTONIO DISTRICT

Guadalupe County—		
Fred W. Nute, Howell 2-A (WC) Jacob C. Darst sur	•	3200
Ben L. Robertson & Ray Dawson, Jr., Diekow et al 1 (WC) sur 60	15	860
P. G. Rouse, Feliz 1 (WC) Viciente Duran sur	•	759
F. D. Spratt, Zuehl Est. 1 (WC) Claribourne Rector sur	•	855
Kinney County—		
Cooper Gas Co., Farr, Jr., 1 (WC) sur 835	•	2506
Wilson County—		
E. E. Young et al, McMeans 1 (WC) C. W. Parrat sur	•	2105

Texas Gulf Coast

Anahuac—		
Humble, Tyrell 27	649	7080
Clear Lake—		
Humble, West Fee 46-C	101	6044
Stanolind, Sowden 3	35	5845
Fairbanks—		
Gem, White 1	82	6833
Friendswood—		
Humble, West Prod. Co. 23	511	6044
Goose Creek—		
Gulf, Hirsch 7 (wc)	40	4421
Hastings—		
Humble, Haden 13	420	6053
Lovell's Lake—		
Humble, Broussard 20	6	7290
Broussard 17	149	7790
Magnet—		
Humble, Blue Creek Ranch Co. 3	95	5540
Manvel—		
Texas, Belcher B-29	465	5500
Rosenberg—		
Humble, Stripka 1	•	lcn
Sour Lake—		
Fernwood, Blaffer 1	30	906
South Cotton Lake—		
Salt Dome, Williams 3	255	6496
South Thompson—		
Humble, Wolters A-4	478	5410
Tomball—		
Humble, Martens 6	24	5558
West Columbia—		
Texas, Hogg 94	280	3300
Willow Slough—		
Sun, Jackson 2	•	8775
Withers—		
McDannald, Foley-Broussard 1	106	5540

WILDCAT REPORT
New Starts and Completions

California
FIRST REPORTS

Kern County—Otis Hoyt's Union 1, sec 6-30-22, McKittrick area, lcn.

Los Angeles County—Plainview Oil Co.'s Hill 1, sec 12-5-11, Westminister area, lcn. Wood-Mellon Oil Co.'s Wood 1, West Dominguez area, sec 31-3-13, rig.

San Bernardino County—B. K. E. Dr. & Prod. Co.'s Inland 1, Victorville area, sec 4-4n-3w, rig.

COMPLETIONS

Ventura County—Bolsa Chica Oil Corp.'s Hidden 1, sec 5-4-18, Piru area, bottomed 3691 ft, pumped 45 barrels daily 23.2 gravity oil.

Tulare County—Shell's Cohn Estate 6-4, sec 4-22-19, bottomed 11,885 ft in gray sand, water s.o. 10,035 ft, Reef Ridge 9310 ft, McLure shale 9830 ft, Temblor 11,100 ft, Vaqueros approximately 11,516 ft, plugged back to 2250 ft, abnd, West Tulare Lake area.

Kansas
FIRST REPORTS

Barton County—C. L. Carlock et al's Jenke 1, c w½ nw nw 7-18-11w, rur. C. L. Carlock et al's Hammer 1, csl se nw 35-19-12w, lcn.

Butler County—R. Wixon et al's Bolin 3, se sw ne 1-27-6e, dr.

Ellis County—Gulf et al's Sanders 1, cnl sw se 30-13-16w, dr.

COMPLETIONS

Cowley County—W. M. McKnab's Coats 1, nec 18-34-4e, ¾ mi w Arkansas gas pool, otd 795 ft, sand 762-95 ft, 340,000 cu. ft. gas.

Rooks County—Lario O&G Co.'s Morrison 1, cs½ sw ne 32-10-17w, ne Burnett pool, top Lansing 3300 ft, base Kansas City 3530 ft, top Sooy 3571 ft, top Simpson dol. 3634 ft, Arbuckle 3661-81 ft, abnd 3681 ft.

South Louisiana
FIRST REPORTS

Iberville Parish—Falcon-Seaboard's Folse 1, Samstown area, 42-11s-13e, lcn.

COMPLETIONS

Acadia Parish—Continental's Vincent 1, Trilby prospect, 26-7s-2w, abnd 9015 ft. Humble's Meche Leger 1, Branch area, 83-8s-2e, abnd 10,000 ft.

Vermilion Parish—G. H. Vaughn's Vaughn 1, Erath area, 49-13s-4e, abnd 11,991 ft.

NORTH LOUISIANA
FIRST REPORT

Franklin Parish—J. B. White et al (Dallas, Texas), A. N. Bailey 1, sw se 1-11n-6e, dk & mir.

MICHIGAN
FIRST REPORTS

Berrien County—Michi-Cal Oil Co.'s Lybrook 1, se sw se 30-6s-17w, lcn.

Lenawee County—Voorhees Dr. Co.'s Gove 1, ne sw sw 8-5s-4e, rig. Lenawee O&G Co.'s McCarberry 1, nw ne nw 36-5s-5e, lcn.

Ottawa County—Basin Oil Co.'s Van Zoeren 1, nw nw sw 12-5n-14w, lcn.

COMPLETIONS

Allegan County—McKenna & Mees' Land Bank 1, sw sw nw 5-1n-15w, Traverse 1179 ft, abnd 1293 ft. Hugh H. Heinig's Mixluschek 1, nw ne ne 9-3n-11w, abnd 1139 ft.

Barry County—Strange O&G Co.'s Golden 1, nw ne sw 31-3n-7w, Traverse 1898 ft, abnd 2135 ft. Fox & Flemings' Owens 1, se se ne 35-2n-9w, Traverse 1787 ft, abnd 1835 ft.

Jackson County—Alfred G. Morency's Brown 1, se sw se 2-4s-2w, Traverse 1555 ft, so&g&w 1556 ft, abnd 1557 ft.

Kent County—Sun's Huyser 1, ne sw nw 12-5n-11w, Traverse 1925 ft, Monroe 2212 ft, abnd 2276 ft.

Montcalm County—Belvidere & Drurys' Huyck 1, 31-12n-6w, abnd 3499½ ft.

Ottawa County—Twin Dr. & Deep Rocks' Henderson 1, nw ne nw 7-8n-15w, Traverse 1744 ft, Dundee 2093 ft, Monroe 2172 ft, so 2173 ft, abnd 2235 ft.

Van Buren County—R. T. & E. Corp's Bray 2, 19-4s-13w, abnd 1230 ft.

MISSISSIPPI
FIRST REPORTS

Holmes County—Lionel A. Hawkins' Humphrey 1, nec 33-13n-2e, dk.

Tallahatchie County—Gulf's Cason 1, c ne 2-21n-1w, mat.

COMPLETIONS

Clarke County—Ark.-Miss. Corp.'s State 1, se nw 16-2n-16e, elev 292 ft, Midway 2165 ft, chalk 2595 ft, abnd 5012 ft.

Copiah County—J. S. Wheless, Jr.'s Columbian Mutual Ins. Co. 1, ne ne 19-1n-3w, elev 366 ft, electric log, abnd 8005 ft.

Holmes County—Hawkins & Matthews' Ellis 1, c ne sw 18-14n-4e, elev 382 ft, chalk 3180 ft, Eutaw 3888 ft, oil sand 3910 ft, abnd 5007 ft in Eutaw.

Madison County—Love Pet. Co.'s Parkinson Est. 1, c nw ne 23-9n-1w, elev 213 ft, electric log, abnd 5316 ft in sand.

Sharkey County—Eureka Pet. Co.'s Cooper 1, nec 15-14n-6w, elev 107 ft, abnd 3742 ft in igneous rock.

MONTANA
FIRST REPORT

Toole County—William Hanlon et al's Merton Mortgage 1, csw se 6-37n-1w, Wilshaw Flats district, 10 mi north production in Kevin-Sunburst field, mict.

NEBRASKA
FIRST REPORTS

Dawes County—G. E. Mitchell et al's Palmer 1, nwc sw 1-33n-50w, Sundance 3200 ft, 6" 3075 ft, sd 3875 ft.

Richardson County—Uhri Oil Corp., Stauffer 1, swc ne 22-1n-13e, surface pipe.

NEW MEXICO
FIRST REPORTS

Eddy County—Jack A. Harris et al's Josey 1, swc se 19-20s-23e, machine. May Weathers et al's Flood 1, c se se 24-18s-23e, dr 155 ft. Martin Yates, Jr., et al's McCall 1, se sw sw 24-18s-26e, mach.

Roosevelt County—Peterson et al's Good 1, nw se se 28-5s-30e, elev 4479 ft, dd from 962 ft., dr 980 ft.

Oklahoma
FIRST REPORTS

Garfield County—Champlin Refining Co.'s Kunkel 1, c e½ se nw 23-23n-6w, dr.

Logan County—Eason Oil Co. et al's Wells 1, ne nw ne 15-16-2w, dr.

Payne County—Devonian Oil Co.'s Scott 1-A, sec ne 19-18n-5e, dr.

Pontotoc County—Patterson et al's Isaacs 1, sw nw ne 3-4n-4e, rur.

Tillman County—Cline et al's Staley 1, sec nw 10-2s-19w, lcn. Kadane Brothers' Andrews 1, nwc 35-2s-19w, lcn.

COMPLETIONS

Kiowa County—Henry et al's Huff 1, swc nw 32-7n-18w, 1 mi w Hobart, abnd 1784 ft.

Okmulgee County—Young's Miller 1, nw sw ne 5-16n-14e, 1½ mi s Hector pool, top Dutcher 1670 ft, hfw, abnd 1749 ft.

Seminole County—Edwards et al's Long 1, se nw nw 1-6n-5e, between Hazel and Grayson pools, top Senora lime 2685 ft, top Earlsboro 2945 ft, abnd 3004 ft.

SOUTH TEXAS
FIRST REPORTS

Bexar County—Joseph H. Turner et al's Brown 1, T. H. Hobbs, sur 357, 16 mi s San Antonio, dk.

Duval County—Bridwell Oil Co.'s Rogers, Jr., 1-A, sur 21, 10 mi nw San Diego, lcn. Mayfair Oil Corp.'s (W. H. Holland) Yates 2, J. Poitevent sur 323, 5½ mi e Seven Sisters, sp.

Gillespie County—Ed L. Nixon's Mogford 1, 690.6-ac tr, sur 29, dr 35 ft.

Guadalupe County—P. G. Rouse's Lenz 1, 121-ac tr, Josefa N. de Los Cortinos sur, 8000 ft ne Elm Creek fld, sd 825 ft; Lenx 1, 11-ac tr, John Isham sur 62, 3500 ft ne Elm Creek fld, dr plugs 800 ft.

Jackson County—Barnsdall Oil Co.'s Lazarus 1, 250 ft fr se/cor, 275-ac tr, Clements subd, Stephen F. Austin sur, ab-5, ½-mi e & slightly n Lolita, set sur csg.

Jim Hogg County—M. W. Butler & Gordon Griffin et al's Allen 1, blk 12, sur 49, DST 3040-50 rec. 150 ft sw, 20 min, abnd 3660 ft.

Jim Wells County—H. H. Howell et al's Schroede 1, 120-ac lse, Casa Blanca gr, Shell farmout, 5000 ft e & a little s Wade City fld, sp. Mid-Continent Pet. Co.'s Schonvogel et al 1, lot 5, A. F. Dahme, E. T. Clark and P. F. Gips subd, Casa Blanca gr, 4000 ft sw Henshaw 1 Blashke, ru.

McMullen County—W. F. Ashby's Enlow 1, Gladys M. Enlow tr out of D. M. Starr sur, ab-424, dr 530 ft. Tybro Royalty Corp.'s Martin 3, H. L. Williams sur 18, crg. Martin 4, H. L. Williams sur 18, lcn.

Medina County—W. D. Bacon, Tr's Wurzbach 1, Juana Delgado sur 37½, 22 mi w San Antonio, sp.

Nueces County—Southern Minerals Corp.'s Hellman 1, e½ of 440-ac tr, sec 148, E. R. Oliver, Jr., sur, ab-959, Magnolia farmout, 1 mi w Baldwin fld, dr 750 ft.

San Patricio County—Texon Royalty Co.'s Roots 1, lot 4, sec 26, fourth addition to Taft farm lands, sk on.

Starr County—George R. Boyle's Standard Trust Co. et al 1, tr in Share 1-B, pors 91 & 92, 12 mi ne Rio Grande city, lcn. Interstate Minerals, Inc.'s Green & Manning 1, blk 2, share 85, por 81, Juris of Carmargo, n Rio Grande City, fsh 2036 ft.

Webb County—Sun's King 1, sur 511, 1 mi s Lehr 1, lcn.

Locke Purnell's Kirkpatrick 1, ne¼, sec 26, CCSD & RGNG sur, blk 1, 24 mi ne Bruni, 5 mi nw Lopez fld, lcn.

Williamson County—H. G. Albert's Albert 1, P. Coursey sur, 3½ mi se Taylor, lcn.

Zapata County—Jack Giblin's Haynes 1, sec 17, Alice Doran Haynes subd, Comitas & Villa gr, lcn. Hawkeye Pet. Corp.'s Primitivo Uribe 1, share 5, partition 6, San Ygnacio subd, G. Borrego gr, lcn.

COMPLETIONS

Duval County—C. Andrade III's Peters 1, 80-ac lse, sur 31, 2000 ft s Peters Oil Prod, sds oil odor, 2438-48 & 2753-75 ft, abnd 2775 ft.

Guadalupe County—Fred W. Nute's Howell 2-A, 231-ac tr, Jacob C. Darst sur, 20 ft e 2, 2½ mi sw Nash Creek, abnd 3200 ft. Ben L. Robertson & Ray Dawson's Diekow et al 1, 60-ac tr, John Isham sur 60, 1⅛ mi ne Elm Creek fld, 5½-inch csg 820 ft, brkn sd 835-48 ft, td 860 ft, comp on pump 15 bpd. P. G. Rouse's Feliz 1, 75-ac tr, Viciente Duran sur, abnd 759 ft. F. D. Spratt's Zuehl est 1, 185-ac tr, Claribourne Rector sur, w of Seguin & 1½ mi sw Marion, chalk 677 ft, Buda 771 ft, Del Rio 802 ft, abnd 855 ft.

Jim Hogg County—M. W. Butler & Gordon Griffin et al's Allen 1, abnd 3660 ft. R. W. Erwin's Jaur Estate 1, s½ n¼ H. & G. N. sur 15, 3 mi sw Colorado fld, Cole 1155 ft, Mirando 2128 ft, Pettus 2551 ft, abnd 3510 ft. Magnolia's Merchants Bank (H. B. Zachry) 45, sec 267, Fite sur, 1 mi n Randado fld, sw sd, oil odor, 2578-82 ft, abnd 3000 ft.

Jim Wells County—Henshaw Bros & Atlantic Refining Co.'s Blaske 1, e 80 ac of 250-ac tr, San Antonio de Agua Dulce gr, 1½ mi s Wade City fld, 5½-inch csg 5175 ft, hrd sd 5088-98 ft, sh & sd 5098-5102 ft, sd 5244-50 ft, td 5603 ft, comp for 120 bpd, 15 percent w,

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7/64-inch ch, 900-lb tub pres, 2025-lb, cas pres, pref 5100-03 ft, 9 shots. M. M. Miller's Miller 1, sec 58, J. B. Dibrell subd, Wade ranch, Juan Jose de la Garza Montemayor Casa Blanca gr, ab-296, 12 mi ne Wade City fld, abnd 6108 ft.

Karnes County—Luling O. & G. Co.'s Nilson 1, 83¾-ac tr, Carlos Martinez sur, 3 mi se Green, 1 mi n Echols Newberry 1, first lignite 1518 ft, miocene Vicksburg 1790 ft, Fayette 1834 ft, Hockley 2139 ft, Cockfield 2857 ft, Pettus sd 2875 ft, abnd 2988 ft.

Kinney County—Cooper Gas Co.'s Farr, Jr., 1, George L. Bledsoe sur 835, 6700-ac blk, 12 mi e Spoffard, gas sh 555-62 ft sd/gas sh 1470-80 ft, Serpentine 555 ft, Edwards 1890 ft, abnd 2506.9 ft.

Live Oak County—Humphries & Hatekin's Hamilton Bros. 1, H. & G. N. sur 13, 3 mi ne Three Rivers, dry sd 2120-34 ft, Jackson 800 ft, abnd 2138 ft.

McMullen County—A Van Desar's Brown 2, R. H. Brown sur 54, 1580 ft ne No. 1, ne part of county, 8½ mi w Whitsett, sd, oil show 806-09 ft, abnd 820 ft.

Nueces County—Richardson Pet. Co.'s Studer 1, blk 17-B, George H. Paul's subd, Driscoll ranch, Shell farmout, 1 mi n Robstown, 7-inch csg 4269 ft liner to abt 5300 ft, brkn sd, oil odor 5619-59 ft, td 7525 ft, comp, flowed 225 bbls, 2 percent water, ¼-inch ch, perf 5195-5207½ ft.

Refugio County—Norsworthy Prod. Co.'s Holeman 1, 1254-ac lse, Michael Riley sur, A-57 1 mi ne Fagan fld, 10¾-inch csg 1003 ft, abnd 2260 ft.

Victoria County—Humble's Welder 1, S. A. & M. G. sur 9, 3 mi n Nursery, 13⅜-inch csg 1509 ft, abnd 5905 ft, John G. Mayo et al's (Commerce Oil Co.) Edwards 2, Desiderio Nira, ab-91, 7 mi n McFaddin fld, abnd 6264 ft.

Wilson County—E. E. Young et al's McMeans 1, C. W. Parrat sur, 11 mi se Southerland Springs, abnd 2105 ft.

Texas Gulf Coast

FIRST REPORTS

Burleson County—Henry Barnett's Fick 1, Lyons area, J. S. Cox *srr.*

Chambers County—Humble's Barrow 1, South Cotton Lake area, S. Barrow sur.

Grimes County—Jordan Dr. Co. et al's Dodd 1, 1½ mi ne Singleton, C. Campbell sur.

Harris County—Jack Frazier's Carter 1, 2 mi sw Genoa, Dickson-Putnam sur.

Jasper County—Houston-Republic's Medrano Fee 1, 5 mi ne Buna, Medrano sur.

Matagorda County—Texas Co.'s Pierce 1, Blessing area, HGN No. 1 sur.

San Jacinto County—Shell's Coline Oil Corp. 1, Rankin sur.

Wharton County—Texas Co.'s Kubela 1, Kubela area, IG&N sur, sec 53.

EAST TEXAS

FIRST REPORT

Angelina County—Arkansas Fuel Oil Co.'s Carter-Kelley 1, 467 ft s of s line and 3363 ft w of sec and 6396 ft e of swc of E. M. Bacon sur, but in T.&N.O. Ry sur 4, 2½ mi se Loy, lcn.

COMPLETIONS

Cherokee County—Shell's S. H. Maness 1, 500 ft from n 580 ft from w lines south 100-ac tr, J. M. Musquez sur, 4 mi sw Reklaw, elev 337 ft, Pecan chalk 3513-3870 ft, Austin chalk 4312-4507 ft, top Woodbine series 4507, top red beds 4526 ft, abnd in Georgetown 4766-88 ft.

Henderson County—W. R. Manning & Jack Browning's Johnson-Brown-Magnolia 1, 660 ft from n and 2300 ft from w lines Thos. Meux sur, Austin chalk 2304-2832 ft, top Woodbine series 3238 ft, top sand 3243 ft, abnd 3245 ft.

Cass County—E. A. Stiller et al's Glass 1, Wm. Paxton sur, Paluxy 3801 ft, abnd 4001 ft.

Harrison County—Fohs Oil Co.'s Sypert 1, Hooper sur (near Hallsville), abnd 4559 ft.

NORTH TEXAS

FIRST REPORTS

Archer County—L. T. Burns et al's Turbeville 1, blk 154, Robt. Carson sur A-80, mim for 5000-ft test.

Hall County—Humbles' Weaver 1, S. P. Ry. sec 51, blk 1, mim for 7500-ft test.

Montague County—Sinclair Prairie et al's Benton 1, nwc of 121.3-ac tr, Thos. R. Jackson sur A-394, dk.

COMPLETIONS

Archer County—J. T. Miller et al's Wilson 1, ATNCL sec 112, abnd 1550 ft.

Clay County—Cook & Smith's Hansard 1-A, blk 47, Specht-McCutchin sur, abnd 1336 ft. Gorman & Norwood's Taylor 2-A, blk 38, Bacon subdiv, abnd 1130 ft. L. H. Haliday et al's Fleming 1, blk 25, Bacon subdiv, abnd 1373 ft.

Wichita County—C. E. Beavers et al's Perkins 1, Wm. Kepler sur A-170, abnd 1450 ft. Roy I. Carter et al's George 1, sw nw SA&MG sec 1, A-268, abnd 1630 ft.

Young County—O. L. Carrico et al's Burch 1, W. M. Porter sur A-225, abnd 500 ft.

WEST CENTRAL TEXAS

FIRST REPORTS

Eastland County—Burton & Womack's Collins 1, nw ne nw H&TC sec 11, blk 1, lcn for Ordovician test.

Jones County—Fain-McGaha Oil Corp.-Ungren & Frazier's Swenson 1, nwc 44.8-ac lse, J. McGrew sur 245, mach.

Shackelford County—F. N. Palm et al's Daniels 1, ne¼ E. T. Ry. sec 16, lcn, R. H. Roark & L. F. Hooker's Walker 1, 1062 ft from se 755 ft from sw lines TE&L Co. sec 377, dr 110 ft.

COMPLETIONS

Jones County—Humble's Clift 1, Ambrose Crain sur 214, A-152, Ellenberger 5688 ft, abnd 6020 ft. Iron Mt. Oil Co.'s Wiley 1, D&DA sec 14, abnd 4023 ft.

WEST TEXAS

FIRST REPORTS

Gaines County—Richmond Dr. Co.-Mascho Oil Co.-Bill Hanagan's Brumley 1, c ne ne PSL sec 17, blk A-12, mim.

Mitchell County—N. V. Hilbun et al's Jackson 1, nec nw H&TC sec 82, blk 97, cem sur pipe.

Pecos County—R. G. Patillo et al's O'Neil 1, c s½ s½ H&GN sec 74, blk 10, sp.

Terry County—J. M. Welborn et al's Bailey 1, c nw nw C&M sec 103, blk 4-X, mim.

COMPLETIONS

Motley County—Humble's Matador L&C Co. 2 Blanco County School Lands, granite 8601 ft, abnd 8604 ft.

Pecos County—Humble's Young 1, c n¼ w¼ H&GN sec 33, blk 10, elev 2455 ft, anhydrite 517 ft, Detrital zone 5185-5624 ft, Simpson 5624-7430 ft, abnd.

Reeves County—T. A. T. Oil Co.'s Orendorff 1, nwc se PSL sec 10, blk 59, elev 3113 ft, abnd 1901 ft.

Would Repressure Dora Pool With Imported Gas

Principal owners in the Dora pool, Seminole County, meet at Shawnee to consider the feasibility of a gas repressuring project in that pool. Phillips Petroleum Company will pipe dry gas to Dora from its near-by plant. Discovered in 1936, Dora has been averaging 2000 barrels daily. Producing formation is the Thurman or Senora sand found around 2920-70 feet. Principal holders are D. B. Malernee, W. T. Shelton, J. F. Smith, Commercial Drilling Company, Troup and others, E. H. Moore, Inc., Hall and others, The Texas Company and Francis Oil & Gas Company.

Dora pool includes Section 28-, 32-, and 33-7n-6e. Average recovery per acre to date is approximately 1500 barrels.

Indian Lease Sales

Five Civilized Tribes will receive sealed bids on 6511 acres of oil and gas leases at Muskogee, Oklahoma, on Tuesday, May 14. Counties represented in this sale include Rogers, Tulsa, Creek, Wagoner, McIntosh, Okmulgee, Okfuskee, Seminole, Haskell, Grady, Stephens, Jefferson, Carter, Love, Johnston, Atoka, Marshall and Bryan.

Both Kiowa Indian Agency at Anadarko, and Shawnee Indian Agency announce that sealed bids will be received on oil and gas leases. On May 16, Kiowa agency will offer 5733 acres in Caddo County, all tracts lying in township 6 north and ranges 10 and 11 west.

On May 23, 43 tracts totaling 3420 acres will be up for sale by the Shawnee agency in various Oklahoma counties.

WANTED—Several second hand spudders, all kinds of cable tools, casing up to 13⅜" for shallow wells, one medium size tractor, and any other kind of equipment suitable for cable tool drilling. Will buy in large quantities, for several producers. Will arrive in Tulsa, from Cuba, on or about May 18. Write to Chas. Ginart, c/o General Delivery, Tulsa, Oklahoma.

At the Tulsa Show Look for....

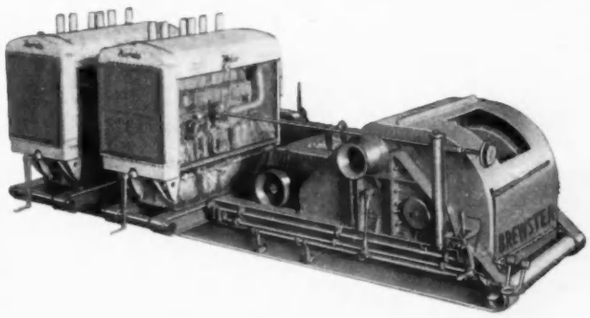
BREWSTER'S PORTABLE EQUIPMENT EXHIBIT

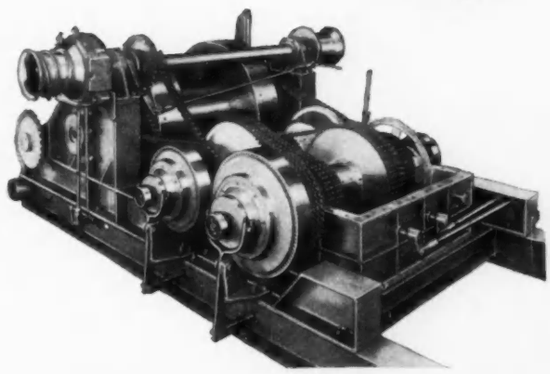
CR SERIES RIG with Derrick

Here is the yardstick by which other slim hole rigs are measured—be sure and see it.

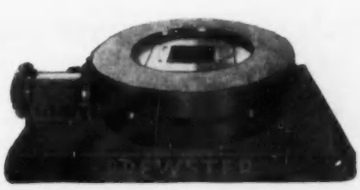
In Space "R" on Oklahoma Drive you'll find a display of Brewster Portable Drilling Equipment that will be worth your trip to see. The two complete rigs shown on this page will be in operation, together with all the New 1940 companion equipment.

VO SERIES PORTABLE RIG





Here is a portable rig that is making drilling history. Compactness and portability together with economy of operation is accountable for its popularity. The oil-bath transmission makes it as easy to operate as your car. If you can't come to the show, write for our New Catalog that gives all details.



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Export Office: Acme Well Supply Co., 19 Rector St., New York City

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"Tailor Made" Since 1912

As Many Cups Per Dollar... But More Service Hours Per Cup

YOU PAY NO MORE for a Dragon Cup yet, when you reckon its longer, smoother performance, you actually pay less. Reducing costly shut-downs alone more than "refunds" its first cost—in time, temper and profits.

On duty or in competition, our Nobs Composition (shallow well) Cup is as "Fearless as the Dragon." "Tailored" of toughest materials, to our own secret formula, by Cup Specialists.

Dragon Composition (for deep wells) and Dragon Leather are our other two "Cup Companion Champions." Call for them by *name*—every time—anywhere.

For Shallow Wells

The Dragon Mfg. Co.

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KEEP YOUR MUD IN PERFECT CONDITION

Gun your mud with the improved Patterson-Ballagh Mud Gun. It swishes, agitates and thoroughly mixes the mud. Only one Operator needed. Can be locked in any position. Rubber-lined nozzles available. Two types of Mud Pumps—Safety and Super-Universal. Details upon request. See Composite Catalog.

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"The Entirely Different Boiler and Engine Treatment"

In legal parlance, that's going some. Out in the oil fields it's the "ne plus ultra."

SAND-BANUM, that pure colloidal concentrate, has been universally cited for eliminating and preventing boiler and engine scale and corrosion, regardless of location, operating or water conditions.

We ask that you sit in judgment. Try SAND-BANUM in the 16 oz. handy can that protects a 250 Hp. boiler for 30 days. Try for 30, 60, or 90 days. If your verdict is not entirely satisfactory, you owe us nothing.

See Our Exhibit
INTERNATIONAL PETROLEUM EXPOSITION
TULSA
MAY, 18-25

AMERICAN SAND-BANUM CO., Inc.

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WESTERN SAND-BANUM CO.

Houston, Texas — **Fresno, Calif.**

Export Representative, Petroleum Machinery Corp.

30 Rockefeller Plaza — **New York City**

RIGID No. 0R_

quickly cuts perfect threads on ⅛" to 1" pipe. Die heads snap out easily for changing, snap into ratchet ring from either side — can't fall out. Dies reverse for threading close-to-wall pipe — *no special dies needed.* Separate sets of semi-high-speed tool steel chaser dies, accurately cut, long wearing. A tough all-steel malleable-alloy tool. Patented carriers with all complete sets at no additional cost. Save time, cut better threads — buy at your Supply House.

THE RIDGE TOOL CO., ELYRIA, OHIO

See us Booth 28-30 Texas Bldg., Tulsa Oil Show, May 18-25

RIGID PIPE TOOLS

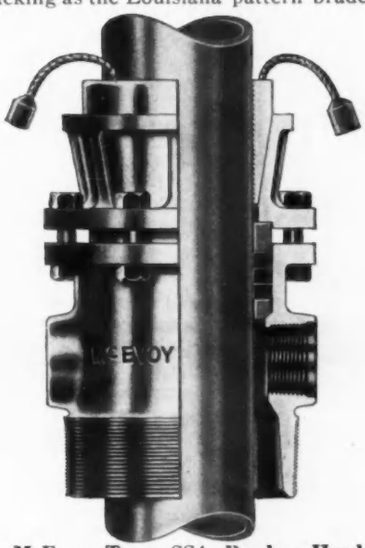
NOTES FOR THE Equipment Buyer and User

Braden Head

McEVOY COMPANY

A braden head, that the makers say brings the convenience of slip suspension to the low pressure field has been announced by McEvoy Company, Houston.

This head uses the same body and packing as the Louisiana pattern braden



McEvoy Type SSA Braden Head

head. The upper flange is provided with a slip bowl so slips may be used to support the casing at any point. This eliminates the necessity for accurate "nippling up" and assures proper load distribution.

Split gland rings are provided to simplify assembly. The entire head is simple and rugged and the cost is exceptionally low. Known as the McEvoy Type SSA Braden Head, it is available in all sizes for low and medium pressure wells.

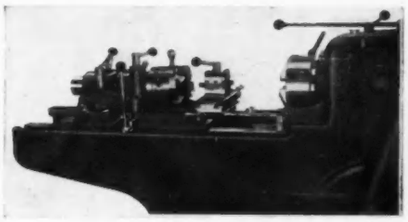
Threading Machine

LANDIS MACHINE COMPANY

A threading machine arranged for reconditioning and threading drill steels or rods has been announced by Landis Machine Company, Waynesboro, Pennsylvania.

The Machine employs a three-jawed universal chuck on the machine spindle instead of the conventional revolving type head, and the die head is mounted on a special carriage. The carriage is equipped with a tail stock into which is fitted the shank of a Lanmatic head. The shank has a sliding fit within the bore of the tail stock to permit linear travel of the head. A lever is provided to extend the die head to its most advanced position in the tail stock where it is rigidly clamped into position for thread-cutting operations. All thread-cutting operations are performed with a leadscrew to provide accurate lead control for the thread.

Directly in front of the die head and on the carriage is a cross slide which



Landis Threading Machine

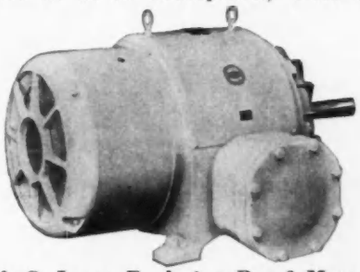
supports a square turret and which, in turn, can be fitted with turning, facing, forming and cutting-off tools. The turret can be turned to any desired position by unlocking the center post clamping lever. A clamp is provided on the side of the carriage to lock the entire assembly into position during cutting-off operations.

The head is of the pull-off type and provision is made for stopping the forward movement of the carriage. The stop is adjustable and may be synchronized with the lead-screw tripping mechanism to provide threads of uniform length and threading close to a shoulder.

Motors

U. S. ELECTRICAL MOTORS, INC.

Announcement of larger explosion-proof motors has been made by U. S. Electrical Motors, Inc., 80 Thirty-fourth Street, New York. In Class I, Group D, ratings have been increased from 25 to 75 horsepower, while in



U. S. Large Explosion Proof Motor

Class II, Group G, ratings have been increased from 7½ to 75 horsepower.

The larger motors are of the shell-type frame construction with a fan described as quiet at high speeds. A larger terminal box facilitates wiring. The fan-end inner-end bell and the outer fan cover bracket are held in place with a combination screw to eliminate one set of holding screws and to supply rigid and secure mounting for the fan cover and bracket as well as to facilitate the assembly or disassembly of the motor.

Safety Insole

MINE SAFETY APPLIANCES COMPANY

Mine Safety Appliances Company, Braddock and Meade Streets, Pittsburgh, has designed a metal insole for wearing inside of shoes as a protection against nails and other sharp objects.

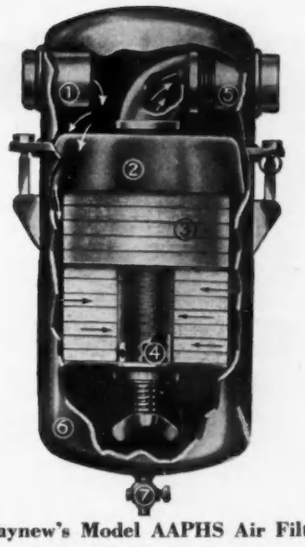
Two overlapping layers of spring steel strips provide a staggered construction which allows the insole to bend with the foot. The insoles are smooth finished and light in weight, moulded in rubberized fabric.

Filter

STAYNEW FILTER CORPORATION

A new air filter designed for complete removal of oil, moisture, dust, dirt, pipe scale and other foreign matter from compressed air lines, designated Model AAPHS, has been announced by Staynew Filter Corporation, Leighton Avenue, Rochester, New York.

The filter has a series of discs of a felt-like material carried on a tube composed of an inner liner of perforated metal covered with a fine bronze wire mesh screen. The tube helps to drain oil removed from the air to the bottom of the filter shell. The lower portion of



Staynew's Model AAPHS Air Filter

the filter shell may be removed for inspection or cleaning by loosening the nuts on the swing bolts. A deflector cup is designed to precipitate most foreign matter to the sides of the shell by centrifugal force.

Sizes available range from ¼- to 2-inch pipe size, with filter capacities from 5 to 100 cubic feet a minute, respectively.

Seeing Eye

WALLACE & TIERNAN PRODUCTS, INC.

An automatic signal device designed to forewarn the excavator operator by an audible signal when his bucket approaches hidden underground service pipes or cables has been announced by Wallace & Tiernan Products, Inc., Belleville, New Jersey.

Designated the WTP automatic pipe anticipator, the unit is recommended for use at power plant and industrial yards requiring any kind of excavation; at petroleum and natural gas pipe line systems, for installation near other

Red-Rex
QUICK-JOINT
PIPE UNIONS

Red-Rex Malleable Unions are designed for 500 lbs. working pressure and tested to 1,000 lbs. Made in both "short hub" and "long hub" types. Identical in construction throughout with high pressure steel union. Interchangeable seal rings.

Completely Described in 1940 Composite Catalog. See Pages 1808-1809.

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NO-SMOKE
STANDCO BRAKE LINING
Is the driller's best friend because it makes the easiest brake known and "feeds off" evenly while drilling. It never scores brake rims. See Page 2100 Composite Catalog.
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CHEMICAL DRILLING MUD THINNER
-ECONOMICAL AND EFFICIENT
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The knowledge gained through years of work and study by some of the most capable men in the oil industry is set down in the various oil books published and sold by the Gulf Publishing Company. Catalog of these books furnished on request.
THE GULF PUBLISHING COMPANY
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NOTES FOR THE Equipment Buyer and User

lines or for finding, uncovering and repairing existing lines; and for dredging where pipes and cables may exist in channels.

It may be attached to any type of excavating or pushing machine, and is described as producing a continuous sound which the operator hears either through a loud speaker or ear phones. As the bucket of the excavator approaches a pipe or cable obstruction, the sound volume increases, and the operator, after a little experience, can dig within a few inches of hidden pipes or cables with assurance.

Marshall L. Hough Still Darling President Following Sales Change

An item which appeared in this section in the issue of March 25, to the effect that Stephen C. May has been appointed general sales manager for Darling Valve & Manufacturing Company, Williamsport, Pennsylvania, failed to include the fact that Marshall L. Hough continues as president of the company. Hough had been acting as sales manager in addition to his duties as president, and May's appointment relieves him of that part of his duties.

Cookston Becomes Sales Manager for Ralco Sales Company

Harry B. Cookston has recently been appointed sales manager of Ralco Sales Company, a division of Ralco Manufacturing Company, formerly Rig-A-Lite, Houston, Texas. Cookston resigned from the sales staff of W-K-M Company to make his new connection after five years in Gulf Coast and Mid-Continent fields for that company. Ralco Sales Company is the selling organization not only for specialty products manufactured by Ralco Manufacturing Company, but has distribution of other specialties used in the drilling and producing branches of the industry.

H. B. Cookston

Bussman Heads Wickwire Spencer Steel Sales as Foster Retires

Wickwire Spencer Steel Company, 500 Fifth Avenue, New York, announces the resignation of R. L. Foster as vice president in charge of sales, effective May 1, and appointment of A. G. Bussmann as general sales manager.

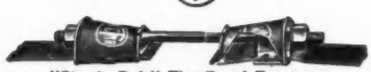
Foster's retirement comes after about 40 years in the wire and wire products industries—first as president of J. C. Pearson Company, manufacturer of nails; second as assistant general sales manager of American Steel & Wire Company; third and for the past 10 years as vice president in charge of sales of Wickwire Spencer Steel Company and its subsidiary, American Wire Fabrics Corporation.

Bussmann attended Carnegie Institute of Technology. He served as chemist for the New York Public Service Commission and then for 14 years as chemist and welding engineer for American Steel & Wire Company, after which he joined Wickwire Spencer Steel Company as sales manager, wire and springs department. In 1939 he was in addition appointed sales manager of the Buffalo District.

Frick-Reid Handling Exports for Merla Tool Corporation

Merla Tool Corporation, Dallas, Texas, announces that an arrangement has been made whereby Frick-Reid Supply Corporation will handle all export business of the former. Frick-Reid Supply Corporation has its export office at 30 Rockefeller Plaza, New York, with G. W. Hamill and J. W. True as representatives.

Tecktonius
ECTMG



"Single Bolt" Flat Band Fastener
TECKTONIUS FASTENERS for . . . all band-joining requirements have been standard equipment in oil fields for a half century. They are TRADE MARKED for your protection.
Write for Price List and Discounts

"Double Bolt" Flat Band Fastener
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TIN END ENVELOPES
for Sand Samples
Made of strong kraft paper, tightly sealed to eliminate leaks. Top end folds over with easy twist and holds contents securely. Most economical for sending and filing of sand samples. Phone, write or wire for our low prices.
GULF ENVELOPE CO.
617 BROOKS Fx. 4171
HOUSTON, TEXAS

NOTES FOR THE Equipment Buyer and User

Security Engineering Makes Houston Hub of Sales Activities

Chosen as the strategic point from which to reach all markets for the company's equipment, E. W. Forrow, vice president of Security Engineering Company, has selected Houston for his headquarters.

E. W. Forrow

"The company's rapidly expanding market during the past six years, says an announcement, has led to establishing eight sales districts. The Gulf Coast headquarters at Houston was established in September, 1938. Houston now has become not only the geographic center for Forrow's extensive travels throughout the company's domestic market, but Houston's waterway offers its added convenience of access to South American markets for the shipment of the company's products. The company has recently installed new equipment in the Houston plant for the manufacture of drillable wire-wrapped screen."

Forrow returned late in April from an extensive two months' trip to South American oil fields, during which he visited oil companies in Trinidad, Eastern and Western Venezuela, and Colombia. Return was made via Panama, Guatemala, and Mexico City.

Texas A. & M. Students Win Cash Awards from Equipment Makers

Cash awards have been made to eight members of the Senior Class in Petroleum Engineering at A. & M. College of Texas in recognition of their ability in technical writings as exhibited by the papers which they entered in the annual contest sponsored by oil equipment manufacturers. Each year through the interest and generosity of a number of these manufacturers senior petroleum engineering students at Texas A. & M. College are given an opportunity to compete for cash prizes of $25.00 first prize and $10.00 second prize for the best papers submitted on subjects assigned by the Petroleum Engineering Department as a part of the regular class work. The subjects of the prize-winning papers and names of the students recently awarded the prizes are:

First Prize: "Oil Metering" by W. G. North; "Lease Stock Tanks" by V. N. Burgess; "Well Surveying Instruments" by J. B. Lassiter; "Placing Acid in Oil Well Treatment" by Phil Hanmaker, and "Oil Well Coring" by K. K. Knapp.

Second prize: "Compressors in Natural Gas Transmission" by J. B. Leftwich; "Rock Bits" by H. Maples, and "Well Surveying Instruments" by Charles Kleuser.

Cardwell to Take Foreign Show Visitors to Plant by Airplane

For convenience of foreign visitors to the International Petroleum Exposition, Cardwell Manufacturing Company is offering fast air trips between Tulsa and its plant at Wichita, Kansas.

After a 45-minute flight, the guests will have an opportunity to inspect the company's manufacturing facilities and procedure. This factory visit will take two hours, following which they will return to Tulsa by air.

A Cessna T50 is being used for this service and has been christened the "Cardwell Clipper." Finished in "Cardwell" yellow and black, and powered with two Jacobs engines in accordance with the most advanced safety procedure, it is capable of cruising up to 191 miles per hour. Cessna Airplane Company of Wichita, is cooperating in this demonstration of the utility of aircraft for business use.

H. W. Cardwell, president of Cardwell Manufacturing Company, stated in announcing the service, "At past expositions we have found that it was impractical to

Cardwell Manufacturing Company plans to take foreign visitors at Tulsa exposition to Wichita for an inspection tour of its manufacturing facilities.

THE DEEPEST

PARAFFIN DEPOSITS CHALLENGED OTIS

Paraffin deposits to the depth of 2400 feet in the Anahuac field of South Texas challenged the ingenuity of Otis Pressure Control about 3 years ago. The result was the development of the Otis Automatic Paraffin Scraper which can be an expense-relieving boon in any field troubled with paraffin. With the Otis Automatic Paraffin Scraper, *the original cost is the only cost.*

WRITE OTIS TODAY
PRESSURE CONTROL
INCORPORATED
DALLAS, TEXAS

SERVICE + SAFETY

HOBBS W T-4 TANDEM AXLE POLE TRAILER

CAPACITY:
60,000 lbs., Truck and Trailer
30,000 lbs., Trailer alone

NO LOAD ON POLE. Because of separately mounted axles and adjustable bail type tongue; First, the W-T-4 is used as conventional pole trailer; second, it may be loaded and pulled as an independent trailer; third, it may be hooked in tandem, doing the same work as a crawler wagon. This is just another of the many Hobbs models developed especially to serve the oil industry.

REFER TO PAGES 1023-1025
YOUR COMPOSITE CATALOG

HOBBS TRAILERS
HOBBS MFG. CO.
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San Antonio
Lubbock

bring our foreign guests to our factory during the Tulsa show, due to their limited time." It requires over six hours by bus or car, seven hours by train, and more than five hours by regular airline (due to the necessity of going via Oklahoma City and resultant poor connections) for a one-way trip from Tulsa to Wichita. The "Cardwell Clipper" requires only 45 minutes to make the trip.

Foreign representatives of the company will attend the company's exhibit at the Tulsa Oil Show, Block F, and offer their services to the foreign personnel of oil companies as interpreters and translators. These representatives are well versed in oil well drilling and servicing procedure and can converse in English, French, Spanish, German, Italian, Hungarian, Serbo-Croatian and Slovenian.

Mission Manufacturing Company Plans Sales Conference at Tulsa

The annual sales meeting of Mission Manufacturing Company's sales staff with the management will take place in Tulsa on May 15, 16 and 17, preceding the International Petroleum Exposition. The deliberations will take place in the Mission house, especially leased for the duration of the show. Executives present will be Walter B. Sharp, president, and W. T. Campbell, vice president in charge of sales, both of Houston.

All salesmen will be brought to Tulsa for this meeting, and will participate in the show through Monday, May 20.

In addition to the above executives, the following will remain throughout the show: J. D. Best, assistant sales manager; E. H. Trammell, manager of the export division of Mission Manufacturing Company in New York; J. H. Tucker, A. O. Nelson, covering Oklahoma and Kansas; and Fred S. Price, from the Wichita Falls district.

W. S. Blodgett, Jr., Named Tulsa Representative for Norvell-Wilder

Norvell-Wilder Supply Company has appointed W. S. Blodgett, Jr, as their Tulsa representative, replacing J. M. Thompson, resigned.

Blodgett is a graduate engineer from Texas A. & M. College and spent four years with a major oil company before entering the supply business. He has been with Norvell-Wilder Supply Company four years, the last 1½ years working out of the Beaumont office.

Measuring Line Reels

C. A. Mathey Machine Works, 212 South Frankfort, Tulsa, has completed a catalog giving complete descriptive information on its measuring line reels and associated equipment. Type A measuring line reel with measure meter and rack installed in the rear of a light truck is equipped with a standard hydraulic governor, clutch and braking system and throttle control. The operator can control the entire operation of the reel from one position. It handles 12,000 feet of 0.072 line.

Welding Electrodes

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania, has issued a 12-page illustrated bulletin describing its AC and DC crucible-weld flexarc welding electrodes. The publication lists electrodes for welding various classes of mild-carbon steel, cast iron, stainless steels, aluminum, copper and its alloys, and manganese, as well as electrodes for arc-cutting and hard-surfacing. Physical properties and uses of each electrode and the types of welds they produce are discussed.

It's a Fact — Johnston

FEW STORIES ABOUT THE GENTLE ART OF GRAFT EQUAL THAT OF TWO MEN WHO OPERATED IN PENNSYLVANIA SOON AFTER THE DISCOVERY OF OIL. SECURING TWO OR THREE BARRELS OF OIL FROM OIL CREEK, THEY BOTTLED IT AND STARTED OUT IN HORSE AND WAGON TO PEDDLE IT AS MEDICINE. NEARING A TOWN, ONE OF THE MEN WOULD GO ON AHEAD TO THE NEAREST TAVERN AND START DRINKING. SUDDENLY HE WOULD FALL OVER ON THE FLOOR, APPARENTLY VIOLENTLY ILL. IN THE NICK OF TIME THE "DOCTOR" WOULD ARRIVE AND, ASKING WHAT THE MATTER WAS, EXAMINE THE MAN. HE WOULD THEN ANNOUNCE TO THE CROWD THAT HE HAD "JUST THE CURE". AFTER SWALLOWING WHAT AMOUNTED TO A DOSE OF PRIME PENNSYLVANIA CRUDE, THE PARTNER WOULD QUICKLY RECOVER. THE RESULT WAS A SELL-OUT OF THE "MEDICINE"—AT FANCY PRICES—TO ALL PRESENT.

BUT TO DIAGNOSE THE CONDITION OF THE ZONES YOU DRILL THROUGH, YOU CAN'T DO BETTER THAN TO USE THE JOHNSTON FORMATION TESTER. IT TELLS YOU QUICKLY, ACCURATELY AND SAFELY—BEFORE CASING IS SET—THE PRODUCTION POSSIBILITIES OF EVERY SAND ENCOUNTERED. BY TESTING EACH ZONE UNDER ACTUAL PRODUCING CONDITIONS YOU CAN GUIDE YOUR WELLS TO EFFICIENT, ECONOMICAL COMPLETION . . . KNOWING THAT EACH STEP IS THE RIGHT STEP TOWARD SUCCESSFUL RESULTS.

THE JOHNSTON ENGINEERING BROCHURE 35 ILLUSTRATES AND DESCRIBES IN DETAIL THE OUTSTANDING FEATURES OF JOHNSTON FORMATION TESTING METHODS AND EQUIPMENT. WRITE FOR IT TODAY—NO OBLIGATION, OF COURSE.

Johnston

$5 FIVE DOLLARS ($5.00) WILL BE PAID FOR EACH INTERESTING OR UNUSUAL FACT CONCERNING THE PETROLEUM INDUSTRY (EITHER IN THE UNITED STATES OR ABROAD) WHICH IS USED IN THIS SERIES OF JOHNSTON ADVERTISEMENTS. SUBSTANTIAL PROOF MUST ACCOMPANY EACH CONTRIBUTION. WHEN TWO OR MORE SIMILAR FACTS ARE SENT IN, THE AWARD WILL BE GIVEN TO THE FIRST ONE RECEIVED . . .

M. O. JOHNSTON Oil Field Service Corp.
3117 SAN FERNANDO ROAD ALbany 0186
LOS ANGELES, CALIFORNIA
Bakersfield 2794 Ventura 5621
"Servicing California and Selling Exclusively Foreign"

FORMATION AND CASING TESTING — JOHNSTON

JOHNSTON Oil Field Service Corp.
5702 NAVIGATION BLVD.
HOUSTON, TEXAS
"Servicing Mid-Continent and Gulf Coast"

"WHY SET CASING BEFORE YOU KNOW!"

These officers of the International Petroleum Exposition were pictured during a recent meeting at which final plans for the Tulsa show were discussed. From left to right, William A. Schleuter, Refinery Supply Company, director; Phil Bohart, Gulf Oil Corporation, production committee chairman; W. G. Skelly, president, and Jay P. Walker, of National Tank Company, a director.

Squeaks from the Bull Wheel

Tails You Lose

The last time I went horseback riding, I wanted to go one way and the horse wanted to go the other.

What happened?

The horse tossed me for it.

Simple Definition

"Do you understand this federal building-loan scheme?"

"Sure. They build you a house, and you pay so much a month. By the time you are thoroughly dissatisfied with the place, it's yours."

Absentminded

"Darling," asked the doctor's wife, "why have you ripped out the back part of this book?"

"Have I?" he asked. "How silly. I must have done it without thinking. It's only the appendix."

Maybe It's a Pace-setter

"Madam, this train goes to Omaha and points West."

"Young man, I want a train to Oshkosh, and I don't care which way it points."

He Runs a Risk

"I understand," said a young woman to another, "that at your church you are having such small congregations. Is that so?"

"Yes," answered the other girl, "so small that every time the rector says 'Dearly Beloved,' you feel as if you had received a proposal."

Lingers On

He told the flapper of his love. The color left her cheeks; but on the shoulder of his coat it showed for many weeks.

Antidote

Did Freddie get into any trouble while I was away?

Nothing 'ceptin' he swallowed a bug, but I gave him some of that insect powder right away, so they's nothing to worry about, Ma'am.

All Settled

Are you sure your wife knows I'm coming home with you for dinner?

She ought to, I argued for half an hour about it.

The Sign

"Why the shivers?"

"This is my fifteenth ice cream, and my girl hasn't turned up."

"Why not have a hot drink?"

Daren't. We've never seen one another—it's all been done by writing; and I told her she'd recognize me because I'd be eating ice cream.

Hot Dawg!

You have made your hero too hot headed, I'm afraid.

How do you mean?

Well, he has a lantern jaw to begin with. And so his whole face lit up! His cheeks flamed; he gave a burning glance, and then, blazing with wrath and boiling with rage, he administered a scorching rebuke.

Testing It

"Yes, it's a nice house. But why are all those windows smashed?"

"Oh, that was yesterday. A chap came to look over it, and he wouldn't believe it was only a stone's throw from the station."

Quite a Cavity

"Why, my dear, I haven't seen you for ages."

"Oh I've been so busy with one thing or another—I've just had my teeth taken out, and the gas stove put in."

Why Not?

"I've been trying to think of a word for two weeks."

"How about fortnight?"

Harrowing Thoughts

"Thought you told me last month you were spading your back yard."

"No, I said I was thinking about it."

"Oh, I see. You just turned it over in your mind."

Loco-Motion

"My car runs a little, then stops."

"A spurt model, eh?"

Just a Blur

"Yes, we spent our holiday touring in the South. It was beautiful down there."

"Motored down, eh? Well, you must have passed some glorious scenery."

"Oh, we must have. Why, we averaged well over 400 miles a day."

Free

"D'ye hear me, Sandy. Hurry and put on your kilts. We are going to the ball game."

"And why should I put on my kilts?"

"Dinna ye know? 'Tis a free day for ladies."

Gotkool
WATER CANS & COOLERS
GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . .
GOTT WATER COOLER
Made in 3, 5, 8, 10, and 20 gallon sizes.
GOTT WATER CAN
H. P. GOTT MFG. CO.
WINFIELD, KANSAS
KEEP PURE DRINKING WATER ALWAYS HANDY

If You've Ever "Pulled" a String of Drill Pipe...
You'll Insist on Seeing Acme's
MUD COLLAR
At the OIL SHOW
TULSA—May 18-25
(Outdoor Space—on Texas Drive)

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